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ORIGINAL LECTURES.

CHRONIC INTERSTITIAL NEPHRITIS (CONTRACTING KIDNEY).

A Clinical Lecture, delivered February 12, 1885.

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GENTLEMEN: The patient before us entered the hospital a few days ago. He was here also last May, in much the same condition, except that he has grown manifestly thinner and weaker, and has been a little delirious. When he first entered he had had some headache, vertigo, and dyspnoea, and complained of dimness of vision, which he attributed to cataract, having already had one removed. It was found, however, that the defect in sight arose from albuminuric retinitis. His urine was rather abundant, of low specific gravity, contained a small amount of albumen, and some hyaline and granular casts. The area of the heart's dulness was not absolutely beyond the normal limits, but was quite up to the extreme, and there was a systolic souffle to be heard at the base. There was no dropsy. The sphygmograph showed a tracing with a moderately strong up-stroke, a little peak at the summit, and then a gradually rounded top and uniform descent, hardly interrupted by any dirotic wave; indicating that the blood passed but slowly from the artery in either direction; not regurgitating into the ventricle, nor allowed to escape with undue rapidity through the relaxed arterioles.

We now find that his vision has decreased, and we can distinguish two souffles at the base, one systolic and one diastolic, the latter being much the weaker. A faint one is also to be heard at the apex, probably distinct from that at the base. The area of the heart's dulness is somewhat increased, but the impulse is not violent. Our sphygmographic tracing is, as you see, almost identical with that of last May (nine months ago), and is highly interesting as showing a constant condition of the circulation, and also as proving the accuracy of the instrument in recording such conditions; which one often feels inclined to doubt in watching the great changes in the result made by various circumstances, but especially by the amount of pressure employed in adjusting the pad upon the artery. As I have told you before, the important thing for us to know about the action of the heart is how it is doing its work, and not how much noise it makes about it; and it is very evident from this tracing that the diastolic murmur cannot signify any amount of regurgitation sufficient to affect the amount of blood in the arterial system. As to the systolic murmur at the apex, it is certainly common enough in such cases to meet with it when there is no reason to suspect valvular lesions of consequence.

The condition of the patient's urine is about the same as before. We have evidently here a typical case of

that form of Bright's disease dependent chiefly, so far as the kidney is concerned, upon an interstitial inflammation, or an increase of the connective tissue. We are in the habit of speaking of two distinct forms almost as if they were two anatomically distinct diseases, as sometimes they are; but it can hardly be supposed that the deposit of new tissue among the tubes of the kidney, with its subsequent cicatricial contraction, can go on for years without affecting the secreting structure of which it forms the support; and, on the other hand, a chronic inflammation of the secreting surface, such as goes on in parenchymatous nephritis, is exceedingly likely to set up more or less hyperæmia and hypertrophy of the underlying tissues. Hence, although we have at one end of the series an exceedingly well-marked clinical group in which the initial lesion of the kidneys is in the connective tissue, and at the other, cases in which for a time the parenchymatous elements may be alone affected, yet we find a great many various grades of intermixture between the two.

In the form which we have at present before us, however, we have more to consider than the renal lesion alone. The condition of the heart and circulation is more than an accidental complication. It is a part and, according to some who have speculated upon its pathology, the most important and essential part of the disease; so much so that Dr. Mahomed, who gave a great deal of attention to the early stages of this affection, speaks of cases of Bright's disease which die without nephritis. This appears to me a misuse of language, since Bright's disease certainly ought to mean the disease that Dr. Bright described; and, although he had noticed and endeavored to account for the cardiac hypertrophy so often met with, yet he was writing, not about lesions of the heart, but those of the kidney. Setting aside, however, the question of nomenclature, it is certainly a great merit in Dr. Mahomed, whose early death we cannot consider otherwise than a great loss to medical science, to have called attention to the fact toward which other observers have been working, that so-called chronic Bright's disease of this form is really a general and not simply a local one.

While it is impossible, in the light of numerous observations which show the same condition under widely different circumstances, to accept the pulse or tracings of high arterial tension as at all conclusive of the imminency of Bright's disease, yet it is perhaps prudent to consider such a condition as being, in the first place when accompanied by grave symptoms, one more point in the diagnosis; and secondly, what is perhaps of more importance, to look upon a continued high tension, when occurring with only slighter disturbances, as a distinctly morbid condition, increasing usually with advancing years and rigid arteries, and hence of more significance when found in young or middle-aged persons.

Chronic interstitial nephritis is undoubtedly one of the dangers ahead, and it is highly probable that treat-

ment directed toward the condition known as lithæmia or incomplete nitrogenous metamorphosis, and embracing diminished nitrogenous diet, diminished acids and acid-forming material, attention to the action of the liver and bowels and sufficient exercise, may be the means of avoiding this as well as other dangers. Fortunately, the rules of hygiene, as well as the resources of medicine, do not always need for their practical application an exact knowledge of the remoter dangers. Such treatment harms few or none among the patients to whom it is likely to be applied, and is as useful in the prophylaxis of many other diseases as of Bright's. That mental tranquillity, so easy to advise and so hard to get, is no insignificant adjunct to such treatment. Dr. Allbutt has shown the importance of distress and worry as factors in the etiology of the contracting kidney, and it has certainly seemed to me that the most typical cases were to be found among middle-aged, active, anxious business men.

The theories between the changes in the kidneys, the heart, and the circulation are too numerous, too complicated, and, I may be allowed to add, not well enough established to be discussed here. The later ones, however, tend less than those of earlier date to attribute the cardiac hypertrophy simply to interference with the renal circulation. There are, however, experiments (those of Grawitz and Israel) and cases which go to show that destruction or injury to a considerable portion of the secreting structure of the kidneys, notwithstanding a very free formation of urine, may give rise to hypertrophy of the heart.

Such a case was the following: A boy, aged 5, had always passed urine copiously and frequently. Notwithstanding its involuntary passage, he could always pass more when called upon. The urine presented no peculiarities, except a very low specific gravity, a small amount of albumen with a deposit of a few pus cells, and no casts. He died two years later with headache and convulsions. The bladder was found very large, the urethra unobstructed, and the ureters dilated completely down to their entrance into the bladder and up to the kidneys, the pelvis of which were dilated and the secreting substance much atrophied, that on the right side being reduced to a few very thin patches and a nodule at one end. The arterial system appeared healthy, but the left ventricle was large, thick, and firm. The sequence of events seemed here to have been paralysis of the bladder, dilatation of the ureters, atrophy of the kidneys, hypertrophy of the heart.

In the case before us, we are apparently dealing with one in which the cardiac and renal lesions are progressing side by side. The urine shows us the usual somewhat abundant quantity, abundant, that is, in proportion to the amount of fluid taken, a small amount of albumen, and a few casts. The general symptoms are as yet rather those of gradual failure than of local lesions or the effect of excrementitious accumulation. There is no dropsy, and, beyond some moderate delirium, no cerebral symptoms, neither paralysis nor convulsions. He has not even that intense "nervousness," or restlessness, or vague distress sometimes seen. Gastric disturbance is not extreme, although he does not eat a great deal, and he has had some, but not persistent, vomiting.

How far can we interfere in such a case to ad-

vantage? We could treat some of his symptoms; we can regulate his diet, give him partially digested food; administer bismuth or lime-water or digestives for vomiting; give morphia or caffeine for severe headache, give morphia or the hot-air bath or jaborandi (better the bath) for headache or convulsions; cathartics for dropsy, or tap him for an effusion sufficient to cause dyspnoea; but, unfortunately, he has none of these symptoms, and our question refers to his evident steady but tolerably comfortable progress toward a fatal termination.

I know no good reason to suppose that any drug has the power to remove the excess of interstitial tissue from the kidney, nor if it could do so that the secreting structure could be otherwise than irreparably damaged. Iodide of potassium has failed. Dr. Bright knew that mercury ought not to be given, and there is little to be hoped for in the other members of the same chemical group. The usual history of such cases goes to show that progress, though slow, is certainly, when advanced as far as this, steadily onward.

There is a class of drugs which have the power rapidly to reduce the tension of the arteries. These are the nitrites of amyl, of sodium, of potassium, of ethyl (spiritus ætheris nitrosi), and nitroglycerine. Of these, the latter has been used in some cases of Bright's with good results, of which one is claimed to be an increase in the quantity of urine.

In cases of the kind now under consideration, the urine is usually during the whole, or nearly the whole, progress of the disease sufficiently abundant, and the instances reported by Mr. Robson of the beneficial action of this drug in chronic Bright's disease do not seem to me to have been interstitial nephritis, but rather parenchymatous or mixed. Asthmatic symptoms, such as may often be present, and were so in some of his cases, are likely to be greatly relieved thereby. As to acute cases, the prognosis is so favorable under treatment directed toward sufficient elimination by the skin and to relief of irritation in the kidneys, that we can hardly consider successful results in a few cases as proving a great deal as to the value of a more specific treatment. In one case in which the tension was persistently high, I tried the effect of nitroglycerine on several occasions, carefully observing the pulse by the sphygmograph both before and at various intervals after the administration of doses as large as five minims of the usual solution (1 to 100) without perceptible effect. This was only case, however, and I have not repeated the experiment. I do not find that this remedy has as yet conquered a place for itself as the accepted or even a specially important one in renal disease of this kind.

It seems to me highly improbable that in the fully developed disease these agents, although useful in the relief of some symptoms, can materially modify its course. In the earlier stages, the dietetic and hygienic rules already spoken of, with attention to the bowels and skin, are of more importance and greater efficiency.

It is interesting to note that the high tension prevailing through the course of the disease may be temporarily modified by fever without producing any permanent change for the better.

A middle-aged man, who presented during his months of stay in the hospital uniformly the signs of high ten-

sion as well as the urinary symptoms of contracting kidney, had, on several occasions, acute attacks of a gouty character, during which the tension fell and the pulse presented, as shown by the sphygmograph, the usual characteristics of fever; a strong primary rise succeeded by a rapid fall and strongly marked diastole. This remark does not apply to the fever accompanying acute nephritis. In this affection, the tension falls with the improvement in the other symptoms.

ORIGINAL ARTICLES.

DISINFECTANTS.

PRELIMINARY REPORTS OF THE COMMITTEE ON DISINFECTANTS OF THE AMERICAN PUBLIC HEALTH ASSOCIATION.

IV.

DRY HEAT.

BY GEORGE H. ROHE, M.D.,

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THE first accurate observations on the disinfecting power of dry heat were made by Henry, of Manchester, in 1831. (Quoted in E. Vallin: *Traité des Désinfectants*, Paris, 1882, p. 226.) Henry exposed (fresh?) vaccine virus to temperatures varying from 50° to 82° Cent. (122°–180° Fahr.) for two, three, and four hours, and secured complete disinfection, none of the specimens of vaccine thus exposed producing vaccinia when subsequently inoculated. Exposure for three hours to a temperature of 49° C. (120° F.) failed to disinfect. No control experiments with non-disinfected virus were made by this observer.

E. B. Baxter (*Report Medical Officer of Privy Council*, etc., N. S., No. vi. p. 216) exposed dry vaccine to a temperature of from 90°–95° C. (194°–203° F.), for thirty minutes. Disinfection was complete. Vaccination with disinfected virus was unsuccessful. Control inoculations with non-disinfected virus were successful.

Carstens and Coert reported to the International Hygienic Congress of 1879 (quoted by Vallin, in the above-mentioned work) the following conclusions:

Fresh animal vaccine heated to 64.5° C. (148° F.) for thirty minutes loses its virulence. Fresh animal vaccine heated to 52° C. (125° F.) for thirty minutes does not lose its virulence. The maximum degree of heat to which fresh vaccine can be exposed without losing its infectivity probably varies between 52° and 54° C. (125°–129° F.).

Davaine, in 1873, destroyed the virulence of fresh anthrax blood¹ by exposing it to temperatures of 55° C. (131° F.) for five minutes, 50° C. (122° F.) for ten minutes, and 48° C. (118° F.) for fifteen minutes.

Werner, in 1879, exposed putrefactive bacteria on pledgets of cotton and then enveloped in dry cotton to a temperature of 125° C. (257° F.) for one hour, and secured complete disinfection.

Merwich (*Deutsche Med. Wochenschr.*, 1880, p. 498) exposed putrid material (containing bacteria of putrefaction) to a temperature of from 125°–150° C. (257°–302° F.) for five minutes with like success.

Schill and Fischer (*Mitt. a. d. Kais. Gesundheitsamte*, Bd. II. S. 134) found that exposure for one hour to a temperature of from 100°–130° C. (212°–266° F.) destroyed the virulence of tuberculous sputum, as tested by the inoculation of rabbits and other animals.

Koch and Wolffhügel (*Mitt. a. d. Kais. Gesundheitsamte*, Bd. I.) experimented with a large number of pathogenic and non-pathogenic organisms. A temperature varying from 78°–123° C. (172°–253° F.) maintained for one hour and a half (over 212° F. for an hour) sufficed to kill micrococcus prodigiosus and the bacilli of septicaemia of mice and rabbits, but failed to destroy the spores of bacillus anthracis and of various non-pathogenic bacteria and fungi.

Micrococci and bacilli containing no spores, and spores of mould fungi, were completely killed by one and a half hour's exposure to a temperature of from 120°–128° C. (248°–262° F.); but spores of *B. subtilis*, *B. anthracis*, and of a bacillus growing upon potato, resisted a second heating to the same temperature for a similar length of time.

These authors further experimented upon a number of organisms disposed in various ways in the disinfecting chamber, so as to approach in a measure the conditions of practical disinfection. Some of the articles were placed in coat pockets, others rolled up in balls of cotton, oakum, blankets, or soiled clothing, making packages of different thickness and density. The organisms consisted of micrococcus prodigiosus, micrococcus of blue pus, bacillus anthracis, and bacilli found in garden soil. With each package was placed a registering thermometer to indicate the highest temperature reached during the experiment. The temperature in the chamber varied from 133° to 156° C. (271°–313° F.), and the exposure was continued for three hours and ten minutes. The temperatures in the different packages varied from 74.5° C. (167° F.) to 121.5° C. (251° F.). In none of the packages were the spore-bearing organisms destroyed. In a small iron vessel hanging free in the chamber and containing specimens of the same organisms, a temperature of 139.5° C. (283° F.) was indicated by the thermometer. Here complete disinfection had taken place.

Another series of observations with the temperature in the chamber varying from 131°–140° C. (267°–284° F.), and exposure continuing for three hours, resulted as follows: The organisms (micrococcus prodigiosus, spores of bacillus anthracis, and of bacilli of garden soil) and registering thermometers were enclosed in packages of clothing, bedding, and rolls of blankets. Complete destruction of the spore-bearing organisms did not follow unless the temperature of 139° C. (282° F.) had been reached. In one large package consisting of nineteen blankets, thoroughly dried and rolled up, the heat did not penetrate to the interior in a sufficiently high degree to destroy the vitality of micrococcus prodigiosus even.

These experiments were still further varied, but the results obtained did not differ materially from those

¹ Containing bacilli, but no spores.

already given. They all showed the great difficulty of penetration of thick packages of fabrics of various kinds by a sufficiently high temperature to produce disinfection.

A large number of fabrics (linen, silk, cotton, wool, feathers, paper, and leather) were exposed for five hours to a temperature of from 150°–160° C. (302°–320° F.), with the result of producing such changes in color and texture of most of them so as to render them useless.

In a similar series of experiments, Ransom (*Practitioner*, 1878, p. 67) found that exposure to a temperature of from 240°–250° F. would be borne by clothing materials without injury. Vallin (*op. cit.*) states that cotton and wool fabrics do not change color at a lower temperature than 125° C. (253° F.), which corresponds closely with the observations of Ransom.

Koch and Wolffhügel (*op. cit.*, p. 321) submit the following conclusions, which seem to the writer to be fully justified by the results of their own and other observations here collected:

1. A temperature of 100° C. (212° F., dry heat), maintained for one hour and a half, will destroy bacteria which do not contain spores.

2. Spores of mould-fungi require for their destruction in hot air, a temperature of from 110°–115° C. (230°–239° F.) maintained for one hour and a half.

3. Bacillus spores require for their destruction in hot air, a temperature of 140° C. (284° F.) maintained for three hours.

4. In dry air the heat penetrates objects so slowly that small packages, such as a pillow or small bundle of clothing, are not disinfected after an exposure of from three to four hours, to a temperature of 140° C. (284° F.)

5. Exposure to a temperature of 140° C. (284° F.) in dry air for a period of three hours injures most objects requiring disinfection (clothing, bedding, etc.) to a greater or less degree.

V.

MOIST HEAT.

BY GEORGE M. STERNBERG, M.D.,
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WHENEVER infectious material can be consumed by fire, there can be no question as to the efficiency of this mode of disposing of it. But from the experimental data given in the preceding paper, it will be seen that the destruction of desiccated spores by dry heat requires a temperature which injures textile fabrics.

It is quite different with moist heat, and in steam, at a temperature of from 105° to 110° C. (221° to 230° F.), we have an agent which quickly destroys all living organisms, including the most refractory spores.

In the absence of spores, all known microorganisms are quickly destroyed when immersed in boiling water. Indeed, a temperature much below the boiling-point destroys micrococci and bacilli in active growth. Thus I have fixed the thermal death-point of the micrococcus of septicæmia in the rabbit, and of the micrococcus of pus (from an acute abscess) at 140° F. (60° C.), the time of exposure being ten

minutes. This temperature is also fatal to the micrococcus of swine plague. The micrococcus of fowl-cholera is destroyed by exposure for fifteen minutes to a temperature of 132° F. (Salmon). Nine or ten minutes' exposure to a temperature of 54° C. (129.2° F.) is sufficient to destroy the vitality of anthrax bacilli in blood (Chauveau). Davaine has shown that, owing to the low thermal death-point of this bacillus, it may be destroyed in an inoculation wound by the application of heated metal to the surface—hammer of Mayor. May it not be that the rationale of the effect of poultices applied "as hot as can be borne" to furuncles, acute abscesses, etc., is to be explained in the same way? Or, at least, if a temperature sufficient to destroy the vitality of micrococci which have invaded the tissues cannot be borne, is it not probable that their multiplication may be prevented by the continued application of a bearable temperature?

The resisting power of spores is very much greater, and it is well known that the spores of *B. subtilis* and of other species of the genus *Bacillus* withstand a boiling temperature for a considerable time. My culture-fluids have frequently "broken down," on account of the presence of the spores of *B. subtilis*, after two hours' boiling, and, to insure sterilization, I am in the habit of resorting to a second boiling, after an interval of twelve hours, or of sterilizing in a bath containing some salt by which a higher temperature than that of boiling water can be secured.

A temperature of five degrees Centigrade (9° F.) above the boiling-point quickly destroys the most refractory spores. I have recently made numerous experiments upon the spores of *B. anthracis* and *B. subtilis*, which show that the former has less resisting power than the latter, but that both are destroyed by a temperature of 105° C. maintained for ten minutes. The same temperature failed to destroy the developing power of the spores of *B. subtilis* in five minutes, while two minutes' exposure destroyed the vitality of anthrax spores.

These results are in accord with those of Koch, Gaffky, and Loeffler,¹ who found, as the result of numerous experiments, that when a temperature of 105° and upwards was maintained for ten minutes, all spores were destroyed, as shown by their failure to develop in culture-solutions. Where a temperature of 110° C. was reached, the experiment could be stopped, as no spores were capable of germinating after exposure to this temperature. Exposure to a temperature of 100° to 105° C. for twenty or thirty minutes was fatal to anthrax spores, but those of a certain short and thick bacillus found in garden soil were only killed when the temperature was maintained at 105° for twenty minutes.

The question as to the practicability of destroying spores in the interior of packages—rolls of blankets, etc., has received the attention of the experimenters last mentioned, and will doubtless be considered by my colleagues of the Committee on Disinfectants, whose province it is to take account of the various points which may arise relating to the practical use of approved disinfecting agents.

¹ Mitt. a. d. Kaiserlichen Gesundheitsamte, vol. 1. pp. 322–40.

From the experimental evidence presented, it is safe to say that:

The temperature of boiling water will quickly destroy the vitality of all microorganisms of the class of which known disease germs belong, in the absence of spores.

Steam at a temperature of 110° C. (221° F.) maintained for one or two minutes, or of 105° C. (230° F.) maintained for ten minutes, will infallibly destroy the spores of bacilli, which constitute the most difficult test of disinfecting power known.

NOTE.—I desire to call attention to the close correspondence between the thermal death-point of micrococci as fixed by my experiments, viz., 140° F. for ten minutes, and the results obtained by the authors quoted by Dr. Rohé in the preceding paper, in the disinfection—*i. e.*, destruction of specific infecting power—of fresh vaccine virus by similar low temperatures. Certainly this correspondence gives some support to the supposition that infective virulence is due to the presence of the micrococcus found in vaccine lymph, although the etiological role of this micrococcus has never been demonstrated by successful inoculations with pure cultures.

SECONDARY NERVE SUTURE.¹

BY THOMAS M. MARKOE, M.D.,
OF NEW YORK.

It has long been known that divided nerves would, under favorable conditions, unite with restoration, more or less complete, of the functions which had been abrogated by the injury. Indeed, this fact has played a prominent part in the results of the operations which have been performed on nerves the seats of neuralgia, where it has been sought to cure the pain by abolishing the sensibility of the affected nerve by separating it by section from its trophic centre. These operations, as is well known, though giving temporary relief, have commonly failed to be of permanent benefit, because the divided nerves, after a certain lapse of time, have reunited, with re-establishment of function, which has announced itself by a return of the pain in all its original severity. To avoid this disappointing result, operators have been at much pains to prevent, if possible, the reunion of the divided trunk, and various devices have been resorted to for this purpose. Sometimes considerable portions of the nerve have been removed, sometimes a loop of the excised nerve has been doubled back at each cut extremity, and some have fastened back these loops by sutures or ligatures. Some have modified this procedure where the trunk was easily accessible by burying the looped ends deeply in the surrounding tissues, and sometimes foreign bodies have been interposed between the divided ends to keep them separate until the disposition to unite should disappear. In spite of all these precautions, it has not been possible, in certain cases, to prevent a recurrence of the neuralgic disorder, a recurrence which, it is generally believed,

and in some instances has been proved to be associated with a union, and sometimes with an extensive regeneration of the injured nerve. Examination of nerve-trunks which have undergone this regeneration, have shown the nerve-tubules perfectly restored in their continuity, and but little changed from their normal condition.

Such facts as these led very naturally to the hope that nerves accidentally divided, and where restoration of function has not occurred, might be restored to their normal powers of transmitting sensory and motor impressions by exposing the injured trunk and bringing together by suture the divided ends. This operation is not by any means a new one. It was done by Arnemann in 1826, and by Flourens in 1828, and it is stated that it was practised by Dupuytren in several instances at l'Hôtel Dieu. It was not, however, until after the elaborate researches of Augustus Waller, which were published in the Comptes Rendus of the Academy of Sciences of Paris, in the year 1852, that the operation was placed on a scientific basis. He showed, by means of experiments on animals, the whole history of degeneration and regeneration of nerves after injury so completely that he has left scarcely anything to be done by his successors; and, encouraged and guided by his discoveries, surgeons have performed the operation of the suture of divided nerves in a large number of cases in England, on the Continent, and in this country, with a success generally extremely satisfactory, though it must be acknowledged not equally as uniformly so. The operation has been done, in certain instances, immediately on the receipt of the injury, while the cut surfaces were yet fresh; and it has been done as a secondary operation weeks, months, and even years after the original accident, thus dividing the operations into two classes—the primary and the secondary. It is of the latter only, the secondary operation, that I propose to speak this evening.

I have had the opportunity of performing the operation in two cases, of which the histories are as follows:

Valentine Keller, æt. 36, a German, was brought into the New York Hospital, December 25, 1883, with a stab wound of the left arm. The wound was situated on the external aspect of the arm, about two inches above the external condyle of the humerus. It was not more than half an inch long, but the blade of the instrument had penetrated so far as nearly to transfix the limb, grazing in its course the anterior face of the bone. It was noticed that there was no pulsation at the wrist. A counter-opening was made at the point where the wound approached the skin on the inner side of the arm, and a fenestrated drainage-tube passed from one opening to the other. The day after his admission, without any apparent cause, profuse arterial hemorrhage took place. The wound on the outside was enlarged, and the brachial tied above and below the wounded point. No further hemorrhage occurred, but the loss of blood had been so great as to bring on a condition of collapse which was very alarming. Transfusion with a saline fluid was promptly resorted to, and gradually the patient rallied. The wound

¹ Read before the New York Surgical Society, Feb. 24, 1885.

healed slowly, mainly by granulation, and cicatrization was not complete till the end of January. On the 20th of January, attention was called to the fact that paralysis, both of sensation and motion, existed in the parts supplied by the musculo-spiral nerve. There was loss of the power of extension of the hand, flexion of the hand not impaired. There was loss of extension of the fingers, flexion remaining perfect. Motions at elbow-joint perfect. Anæsthesia, but not complete, existed over dorsal surface of thumb, index, and middle fingers, with a good deal of burning pain. He had now recovered his general health, but no improvement could be discovered in the paralyzed parts, though electricity and massage were daily and faithfully employed. He suffered so much from the causalgia, that trophic disturbances in the muscles and skin were beginning to show themselves so distinctly that suture of the nerve was decided upon, and performed on the 9th of February, forty-six days after the receipt of the wound.

An incision was made along the course of the musculo-spiral nerve, having the scar of the wound as its centre. A good deal of cicatricial tissue was encountered in passing down between the brachialis anticus and the supinator longus, but when the nerve was reached it was found to be free and distinct above and below the point of injury, and was without much difficulty isolated from the cicatricial mass and cut off clean with a pair of sharp scissors. By flexing the arm, the divided ends could be easily brought together, and the two were united by two slender catgut sutures passing through the substance of the nerve. The signs of degeneration of either end were not distinct. The wound was carefully closed, and the forearm left flexed at about a right angle with the arm.

February 10.—Complaining of much pain in the wound, but says he feels it radiating down the limb, along the musculo-spiral distribution, mostly on the dorsum of the thumb and the index finger. This pain was regarded as a favorable sign, and, it was hoped, would be the precursor of rapid restoration of lost power. This expectation, however, was not realized; the pain gradually subsided, and then disappeared altogether, the wound meanwhile healing well, mostly by primary union. By the time the operation was performed, the man had recovered his health and strength, and seemed to be in as good a condition as could be desired for its success. Electricity and massage were employed daily, and he was encouraged to use the arm as much as possible. The faradic current caused no response; the galvanic produced at first some contraction, but this soon ceased entirely. The affected muscles were flabby, but not appreciably atrophied. He was kept under observation, and treatment was sedulously continued, when, on the 14th of April, at his own request, he was discharged from the hospital. At this time there was no apparent improvement in the condition of the paralyzed muscles. The conditions as to sensibility were not noted. The hand and fingers were perfectly powerless as far as extension was concerned, and the member was therefore practically useless. I explained to him that restoration of function was often long delayed in these cases, and encouraged him to

use all the muscles of the limb that were capable of acting, and in particular I urged him constantly to direct his will along the paralyzed cord, and try to make the muscles respond to their natural stimulus. I heard nothing more from him, except that he was under Dr. McBride's care in the out-patient department of the hospital, and was not improving. Recently, however, I have received a note from Dr. McBride, saying that Dr. S. O. Vanderpoel, Jr., who had acted in his absence, had reported to him that the man had so far recovered the use of the limb as to be able to go to work.

I saw him on the first of February, and found that he had regained the use of the paralyzed muscles so far that he could extend the hand and fingers, and supinate the hand almost to the full extent and with a good deal of power. The action could not be performed rapidly as yet, or completely, owing, no doubt, to the stiffness of the joints concerned from prolonged disuse. He is conscious of daily improvement, both in strength and facility of movement. The muscles can be felt to contract under the finger and have regained their normal bulk and firmness.

The second case was, to me, one of unusual interest, as I had no experience either of my own or of others to guide me in diagnosis, prognosis, or treatment. I believe the case to be unique in the history of surgery.

Lillie Dougherty, æt. 5 years, was admitted to the New York Hospital October 22, 1884, with a wound of the neck, inflicted by a sharp, clean instrument a short time before her admission. There was found an irregular wound extending from the nucha on the left side, opposite the fourth cervical vertebra, passing obliquely downward and forward to the posterior border of the sterno-cleido-mastoid muscle, and stopping about an inch above the upper margin of the clavicle. The sterno-mastoid and the trapezius were both partly divided. Considerable hemorrhage had occurred, but no vessel required a ligature. The child was slender in form, pale and delicate in appearance, but in good health as far as could be ascertained. The wound was brought together carefully, treated antiseptically, and healed, partly by granulation, in about a month. Soon after the injury, October 30, it was noticed that she was unable to raise her right arm from the side, and gradually as the disability of the shoulder from the wound subsided, it became evident that a certain amount of paralysis existed, unquestionably dependent upon some nerve injury inflicted in the depth of the wound. There was no nerve trunk in the course of the wound whose division could account for the paralysis, and in point of fact nothing but a wound of some part of the brachial plexus was competent to explain the symptoms presented, and this idea was rejected by me at first, and for two reasons: First, the wound did not appear deep enough to reach any part of the brachial plexus, and, second, the line of incision in the neck seemed to be entirely above the course of the fifth cervical nerve which forms the uppermost cord of the plexus. On carefully studying the conditions, however, I finally reached a positive diagnosis, becoming convinced that nothing could have happened in such a wound,

except as severing the upper cord of the brachial plexus could afford an explanation of the symptoms presented.

These symptoms were loss of power of abduction of the arm and of flexion of the forearm upon the arm. Supination was limited and feeble. Pronation good. Extension of forearm slightly, if at all, affected. Flexion and extension of hand and fingers not notably impaired. Anæsthesia well marked over the shoulder and outer aspect of arm. By the time that cicatrization of the wound had taken place, about the first of December, these signs of paralysis had become perfectly distinct, and it was also noted that atrophy was beginning, and was in fact well marked in the deltoid, and supra- and infra-spinatus muscles, and less distinctly in the biceps and brachialis anticus.

She was placed upon tonic and invigorating treatment and regimen, and everything was done to improve and maintain her general health. Faradization of the affected muscles and friction of all the shoulder and arm was continued daily, but without any manifest results. The general condition improved very much to our satisfaction; she was very tractable and obedient in seconding our efforts to make her use her arm and shoulder muscles as far as her will had any control over them. No improvement could be discovered, the arm hung useless by her side, and when she wanted to play with her dolls she had to lift the palsied arm on to her lap with the other hand, and then she could use the fingers to hold it.

On the 8th of December a careful examination of the reaction under galvanic and faradic currents was made with the following results:

Muscles of Shoulder.

| Nerve. | Muscle. | Galv. Cur't. | Far. Cur't. |
|-------------------|----------------------------|---|---------------------------|
| Spinal accessory. | Sterno-mastoid; trapezius. | Normal. | Normal, M & N absent. |
| Ant. thoracic. | Pectoral. | Normal. | Normal. |
| Subscapular. | Lat. dorsi. | Normal. | Normal. |
| Circumflex. | Deltoid. | Normal; increased when applied to muscle direct reaction of degeneration. | Absent; muscle atrophied. |

Muscles of Arm.

| | | | |
|--------------|-----------------------------|--|--------------------------------------|
| Musc. cutan. | Biceps; brachialis anticus. | Normal; increased when applied to muscles; direct reaction of degen. | Absent to M & N; atrophy of muscles. |
| Mus. spiral. | Triceps; supin. longus. | Normal. | Normal or slightly diminished. |

The reaction of the muscles supplied by the rhomboid, suprascapular, and long thoracic nerves could not be satisfactorily obtained, but the muscles themselves showed marked atrophy. The muscles of the forearm were not involved.

The faradic current was now replaced by the galvanic, which was applied daily. No improvement in muscular reaction. Atrophy of shoulder muscles appears more marked. Her general condition is greatly improved. She is in good spirits, eats and sleeps well, and presents the appearance and demeanor of a child in good health.

That the most careful study of the paralyzed muscles alone would have warranted a diagnosis as to the precise point of injury, I am not prepared to assert. Taking, however, all the points as they have been presented above, and associating them with a careful topographical survey of the line of the wound, there seems to be but one conclusion to which all the facts pointed, and that conclusion marked the fifth cervical nerve, which is the first or upper cord of the brachial plexus, as the seat of the injury, and in consultation with my colleagues it was deemed right to make an attempt to suture the wounded cord in the hope of restoring the functions of a limb in its present condition absolutely useless. In view of the fact, however, that these injuries to nerve trunks do sometimes recover spontaneously it was thought best to wait, before undertaking any operation, until it should become quite certain that nature was unable to effect a cure. Accordingly, treatment was steadily persevered in until the beginning of March, when, no improvement being perceptible, it was deemed justifiable to try what surgery could do to bring relief.

The operation was done March 2, 1884, one hundred and thirty-one days after the infliction of the wound. An incision was made along a line corresponding to the upper part and outer margin of the brachial plexus, and carefully followed down until this border of the plexus was reached. The cicatricial tissue was very extensive, and very confusing, as we tried to recognize the anatomical landmarks, and a very careful and tedious dissection was necessary before we clearly recognized the nerve cord involved in the wound. Finally, however, the nerve-trunk above and below the wound could be distinctly seen, and was isolated sufficiently to enable us to trace its whole length from the point of its emergence from the intervertebral foramen to the point where it joins the plexus below. We were extremely careful not to handle roughly, or to pinch with forceps, any part of the exposed nerve, and this it was that so greatly prolonged an already very tedious operation. The cord, which was now seen to be the upper root of the plexus, as we had originally supposed, was divided in two places with sharp scissors, so as to include all that part involved in the cicatrix, leaving a clear cut on both distal and proximal ends through healthy nerve substance. I say healthy nerve substance, but it became evident, on making the section, what I suspected when the nerve was first exposed, that the distal portion beyond the cut was in a condition of physiological integrity, while the short portion, less than an inch in length, which formed the proximal stump, was manifestly smaller, its fibres not so clean and glistening as in the cord below and in the surrounding nervous trunks. In short, it was the proximal, and not the distal, portion of the cut nerve which had undergone the classical degeneration, the

distal portion retaining almost perfectly its normal appearance. I very much regret that I cannot make this statement with the authority which would give it value as a scientific fact; for, unfortunately, no microscopic examination of the cut ends was made, and I am well aware that the gross appearances, though very distinct, would not alone be reliable evidence as to the condition of the nerve-tubules. Two very fine catgut sutures were now passed through the cut ends and tied, not very tightly. Some strain on the suture was easily overcome by flexing the head on the trunk, and drawing it toward the left side. In this position it was secured by bandages. The wound was dressed with iodoform and sublimate gauze, and behaved perfectly well, though not healing entirely by primary adhesion. By the 14th of March the wound was cicatrized, and she soon regained her usual condition of health. Convalescence was delayed by a pretty threatening attack of purulent conjunctivitis, which at one time seriously threatened the cornea. This, however, passed safely by, with no corneal damage, and no further complication occurred. The electrical treatment was resumed, and continued during the remainder of her stay in the hospital. No improvement followed the aspiration, and at the time of her discharge the condition of the muscles, both with regard to electrical reaction and voluntary motion, was just what it had been before the operation, saving that the atrophy, particularly of the deltoid, was more than ever conspicuous.

During the summer, she was taken to the country, and seemed in all respects quite well, but no change in the paralyzed parts was noticed until about the first of October, when slight voluntary motion began to show itself, which slowly but steadily improved. About the middle of January she was brought to my office, and I was delighted to find that she could flex the forearm upon the hand, and could abduct the arm from the side, during which movements the muscles could be felt contracting and hardening under the finger placed upon them. The shoulder had recovered its rounded contour and the flexor muscles had become markedly developed. In short, the evidences of atrophy had disappeared, and the indications of voluntary power were daily increasing. On the 21st of February I saw her again, and found the extent and power of muscular motion surprisingly increased. The case promises to prove a complete success.

The study of this whole subject during the last fifty years has led to some important and very interesting discoveries as to the behavior of nerves under and after severe injury. In the first place, it has been shown that, after complete section of a nerve-trunk, there ensues a degeneration of all that part of the nerve beyond the point of severance which extends throughout the whole distribution of the cut nerves, and is so complete that, according to most observers, all trace of original nerve tissue is lost. There is, however, considerable discrepancy of opinion as to the completeness of this destruction, some contending that it is absolute and entire, others believing that the sheaths of Schwann and the axis-cylinder never entirely disappear. That nerves

thus degenerated after section was known long before his time, but Augustus Waller, in 1852, by his admirable and ingenious experiments, brought out all the facts connected with both the degeneration and regeneration of nerves so completely that scarcely anything of importance has been added to the history of the process since his time. The changes, as described by Ranvier, are about as follows: The experiments being conducted on cats and dogs, it was found that after section of a nerve the distal segment began to show signs of change as early as the first day. The myelin begins to disintegrate, and by the fourth to the sixth day has mainly disappeared, leaving the sheaths of Schwann filled with fine fatty granules. The axis-cylinder has also by this time, according to his observations, entirely disappeared. By the twentieth day, the sheaths of Schwann have become empty, and this he considers to mark the extreme point of degeneration, from this condition very little change being observed. A similar degeneration is noticed to begin at the cut extremity of the proximal end, but only reaches for a line or two from the end of the nerve and then ceases, the axis-cylinder remaining unchanged. This disintegration is now followed, after a varying interval, by a regeneration by which, in favorable circumstances, the altered nerve is restored to its normal condition and functions. This change consists in a reversal of the steps which the nerve took in its degeneration. The sheaths of Schwann, which, according to this observer, never entirely disappear, begin again to be filled out with a granular substance which soon assumes the character of myelin, the axis-cylinder makes its reappearance, and, in short, the atrophied and shrunken cord gradually assumes the appearance, and nearly the dimensions, of the original nerve. While this reformation of the nerve-tubules is going on, the union of the cut ends is being accomplished. By about the twentieth day fine delicate fibres begin to sprout from the proximal end into the cicatricial tissue which surrounds it, and gradually developing themselves in size and perfection of organization, shoot through the intervening bond of union till they encounter the distal end, with which they amalgamate themselves. Finally, if the ends are in good apposition, the cicatricial bond of union is occupied and displaced by newly formed nerve which joins the two into one continuous cord, in which the individual nerve-fibres are almost perfect imitations, perhaps on a slightly reduced scale, of the original nerve elements. In the animals, experiments on the repair was not perfected until about six months had elapsed. In man, it is probable that the period of perfect restoration is longer, but no accurate knowledge on this point has been attained.

Another of the effects of nerve section which has of late engaged the earnest attention of both physiologists and practical surgeons, is the paralysis of motion and sensation which usually follows a complete section of a nerve-trunk. I say usually, because the results of nerve division are by no means uniform or constant. There are reported, for example, a certain number of cases in which, after complete section of a nerve-trunk, no loss of sensibility could be detected in the parts supplied

by it, and a certain number of others in which sensibility being momentarily suspended, has been regained in a period so short as to make the immediate and perfect union of the divided ends the only explanation possible of the rapid restoration of nerve power. Still further, it is constantly noticed that anæsthesia following a divided nerve-trunk does not by any means accurately correspond with the area of distribution of the branches of that trunk, but is much less extensive than it should be, anatomically speaking, sometimes occupying only a small part of the region, the whole of which we should expect, *a priori*, would be affected. To the explanation of these facts much attention has been given by German and French observers; and much careful research has been expended, with the result of having some of the phenomena not as precisely accounted for as might be desirable.

The first mode of explaining these facts of the limited area of anæsthesia and the rapid return of sensibility is by invoking the aid of anastomosis. That anastomosis in the ordinary acceptance of the term does not exist among the nerves is conceded. It has been demonstrated by Waller that the nerve-tubules individually are continuous from the point of their central origin to the point of their final distribution, and that no communication exists between the myelin in these tubules, and that therefore one tubule cannot take up the function of a neighboring one which has been injured. It has been clearly shown, however, by the elaborate experiments of Arloing and Tripier, that, in the cat and dog, and in the horse and ass, there are certain tubules which pass from one nerve to another in a continuous or in a reverse direction, to be lost on the nerve to which they have attached themselves at a varying distance on the adopted trunk. These intercommunications are found first in the plexuses, where they are probably very frequent; second, in the branches which are known to pass from one nerve-trunk to another in the course of its distribution, such as those that pass between the medial and radial, and the anastomotic twig that joins the ulnar and the internal cutaneous. The most abundant anastomosis, however, is found near the peripheral termination of the nerves where all the terminal twigs unite to form the network of final distribution. Another explanation of the partial and limited anæsthesia which sometimes follows nerve section, is found by some in the belief that there may be such a thing as the immediate union of the divided ends with immediate restoration of function. This belief is entertained by such men as Schiff, Gluck, Tillmans, Paget, and more recently by Caput and Wolberg, who consider that this primary union is so prompt and complete that no degeneration of the distal fibres can take place; while, on the other hand, it is held to be untenable, because unproved, by such observers as Nicaise, Weir Mitchell, Letievant, Brown-Séquard, and indeed by the great majority of the most distinguished experimenters. These observations as to the limitations of paralysis after section do not apply quite so commonly to lesions of motility. Here the conditions seem to be somewhat different. The effect of section here

seems to be, almost uniformly, a complete motor paralysis, followed pretty early by muscular atrophy, which continues until the function of the nerve is restored by its union. Letievant has, however, called attention to the fact that even here there is room for deception, the associate muscles not paralyzed acting so as in a measure to supply the deficiency of those that are paralyzed, so as to give to the whole group what he calls supplemental motility, which may easily mislead the careless observer. This error is easily avoided by applying the electrical test and by noting the atrophy which is sure to develop itself soon after the nerve supply is cut off. These electrical tests are exceedingly valuable in all stages of these injuries, and may be furnished by both the faradic and the galvanic currents, applied either to the cut end of the nerve or to the skin over the belly of the affected muscle. It is noticed that the electrical current applied, in either way, soon after section causes a feeble contraction of the palsied muscles, but that this contraction grows less and less from day to day as the muscular fibre is undergoing disorganization, and finally ceases altogether, the strongest current producing no response. A curious fact is observed in connection with these electrical tests. It is thus expressed by Nicaise: "The faradization curve during the first fifteen days becomes gradually depressed. After the third week the muscle is no longer excitable, at least through the skin. Towards the sixth week, in favorable cases, the excitability reappears and gradually increases until it reaches the normal reaction. The galvanization curve follows an entirely different course. During the first fifteen days it follows the faradization curve; but from the third week, when the interrupted currents have no longer any effect, the galvanic reaction becomes exaggerated, the curve is raised, soon exceeding the normal, and reaches its maximum when the other is at its minimum. At the moment when repair begins to take place the galvanic phenomena follow an inverse order; at the same time that the faradic current is raised, the galvanic curve is lowered, and both gradually return to the normal level." This is what is spoken of as the reaction of degeneration by the German authors.

With regard to the facts of compensatory nerve supply, after section of a trunk, there can be no doubt, as the facts are so common and so easily observed; but as to the part which anastomosis takes in this return of function, our knowledge can hardly be said to have assumed a positive character. For example, the experiment by Arloing and Tripier, in which each of the four nerves going to a toe in the dog's paw were successively divided, with the result that no insensibility to pain followed the division of the first nerve, and none followed the second, and none the third; but when the fourth was cut, complete anæsthesia was immediately produced, seems to indicate so perfect a communication between the different nerves at some part of their course that we can hardly understand why, if this communication is always present, a severed nerve should show any signs whatever of paralysis.

Another point in the anastomotic theory, which

at first seems hard to comprehend, has reference to the communicating branches which join together some of the larger trunks. In these there has been shown to be fibres which pass from one trunk to another, recurring toward the cerebral centres, when they reach the trunk to which they are destined, and reaching a certain distance up this trunk towards its point of origin. Now, as far as we know, nerves in their normal condition transmit impressions only in one direction—*i. e.*, the sensory nerves send their current from the periphery to the centre, while the motor fibres bring the mandates of the central organ to the muscles at the periphery. If, therefore, there is to be any anastomotic current supplied through these recurrent fibres, the nervous impulse must pass along the nerve in a reverse direction to that which it originally followed. This is a fair objection to this part of the theory, and at first sight seems well taken. The well-known and ingenious experiment of M. Paul Bert, I think, fully answers the objection. M. Bert made an incision along the back of a rat, and then, having denuded the end of the tail of its skin, placed the tail thus denuded in the incision in the back where it adhered firmly. After the union had become firm, he cut off the tail at its root, leaving its end adherent to the back. Now, upon irritating the tail at its root, evidences of sensibility to pain were distinctly manifested, showing that a nerve under altered circumstances could convey impulses in a reversed direction, very much as a telegraph wire can convey messages in both directions.

Of the technique of these operations, but little requires to be said. The injured nerve-trunks are usually superficial, and therefore easily accessible. In the operations which I have done, the main difficulties have been, first, the finding and identifying the distal atrophied extremity; and, second, the disentangling without bruising or laceration of the cut ends from the cicatricial tissue by which they are surrounded, and with which they are apt to be very closely incorporated. Both these proceedings require great delicacy in handling, and great patience in unravelling the slender and fragile fibres, and in extricating them unharmed from the tough and unyielding cicatrix in which they are buried. Another difficulty which I encountered in the neck case was the misleading effect of the cicatricial tissue when I was trying to follow down the areolar interspaces in order to arrive at the injured nerve. So utter was the confusion of layers that, although I had rehearsed the operation many times on the cadaver, I found myself wandering so far from my course that I was well over toward the jugular vein before I could be sure of my landmarks. The two ends of the divided nerve being exposed, the extremity of each is to be severed with a pair of sharp scissors, taking care to go sufficiently high to reach original nerve tissue, and at the same time being careful to avoid cutting away more than is necessary, lest the tension be increased when the ends are brought together. In one of my cases, that of the arm, microscopic examination showed no trace of nerve fibre in the part cut away by the scissors, proving that my section had not reached the real

nerve end. This I think unfortunate, and must always delay, and probably sometimes defeat, the object of the operation. Various sutures have been used to join the cut ends, but opinion seems to have settled upon catgut, as fine as is consistent with strength. The shape of the needle is not unimportant. A common round cambric needle is the best, making its way through the tissues by displacement rather than by cutting. Wolberg recommends a flat needle, shaped like a sabre, but without cutting edge. Some are careful not to pass the needle through the substance of the nerve for fear of injuring the tubules. Most operators prefer to pass the suture through the body of the nerve, as securing a stronger hold. Some cut the two ends obliquely so as to make flaps, which, being applied to one another, afford an increased surface of contact. Rawa brings the ends together side by side and then surrounds them and binds them together with a catgut ligature. When much loss of substance has occurred, and the ends cannot be made to touch, Vanlear has suggested placing the ends in a Neuber's drainage-tube, and with catgut threads attached to each end of the nerve, drawing them as near as possible together within the tube, and leaving the space between the ends to be filled up by the reparative material. In a case in which he found it impossible to bring the ends in apposition, Löbker resected the bones of the forearm, thus shortening the limb so that the ends could be approximated without tension. In an experiment, Gluck transferred a rabbit's nerve to the limb of a chicken with success; and on the human subject, Albert replaced an excised nerve with a segment of nerve taken from a recently amputated limb.

The nerve ends being brought securely together, great care is to be taken by position of limb that no tension should occur. The wound should be brought together so as to secure primary union if possible, as the healing by granulation is believed to exercise a very unfavorable influence on the result, particularly if it be long delayed, or accompanied by much suppuration.

The time at which return of sensation takes place is very variable, in some cases sensibility being well marked in a few days, in others not until months or even years have elapsed. It is sometimes noticed, as in my musculo-spiral case, that, very soon after suture, a painful sensation pervades all the branches of distribution of the severed nerve, and this is sometimes the precursor of a healthy restoration of sensibility. It is not so always, however, but sometimes gradually subsides, leaving the parts in their original, more or less perfect insensitiveness. The return of motility is commonly longer delayed than the return of sensibility. Here we have not only the degeneration of the nerve, but degeneration of muscular fibre to be overcome, and accordingly this paralysis is not only more slowly recovered from, but much more frequently remains a permanent disablement. It will be noticed that, in this communication, I have scarcely alluded to the trophic changes which are so certain to ensue after nerve section. This has not been because I undervalued these changes, either in their clinical

or scientific aspects. It is simply because in the two cases which have been the basis of my studies these trophic changes never assumed any prominence.

With regard to the results of the operations that have been put on record, the most recent and best tabular statement is found in Weissenstein's article on secondary nerve suture in Brun's *Chirurgischen Klinik*, 1884. He gives the results of thirty-three cases, from all sources, in which the operation has been done at varying periods after nerve injury, in almost every case after the original wound had healed. To these thirty-three cases I have been able to add—

1. Dr. W. S. Halsted's case. B., aged 22 years, injured by glass. Degenerative reaction of muscles and complete loss of sensation in the regions supplied by the median and ulnar nerves at the time of the eighth month after injury. Separation after paring off nerve ends about three inches. Neuro-plastic suture of median and direct suture of the ulnar, with relaxation sutures in both. Strong flexion of hand and forearm, and still some tension. The wound healed by primary union. No benefit six months after the operation.

2. By Dr. Weir, wound of sciatic nerve nine years previously, operated on December, 1882; catgut sutures. By suturing adjacent tissues, and flexing knee forcibly, approximation was obtained. No improvement in motility, but gain in general sensation, and great improvement in trophic changes, which had advanced to ulceration. The ulcers all healed and local nutrition generally improved.

3. A case operated on by Dr. W. T. Bull in July, 1883. It was a case of wound of median and ulnar nerves with corresponding paralysis. The suture of both nerves with catgut was done about seven weeks after injury. Was discharged from the hospital about five weeks after operation, with both sensation and motility beginning to return and improving daily.

4. A case reported by Dr. Roswell Park, of Chicago, in which the radial was sutured with catgut sixteen days after its division. The recovery was rapid, the patient being considered well in six weeks.

5. Case reported by me above, of musculo-spiral suture forty-six days after wound. Catgut suture, recovery of sensation and motion, with a useful limb. Daily improving.

6. Case reported above of suture of upper cord of brachial plexus, one hundred and thirty-one days after its division. Recovery of sensation and motion and nutritive condition, daily becoming more perfect.

These six cases added to Weissenstein's thirty-three, make in all thirty-nine cases. Of these, twenty-nine were successes, in so far that sensibility and motility were at least partly recovered. In six cases no improvement, or almost none occurred, and in three cases the data were insufficient for statistical use. The dates of improvement can be given approximately thus: Traces of sensibility were noted in from two to four weeks. Traces of motility in from sixteen days to sixty, in two cases more than a year. Complete restoration of muscle function was marked in one case as occurring in twenty-six days; in several cases not till the lapse of one or even more years. All

the authors seem to agree that electricity and massage greatly favored the return of function in the paralyzed parts. If now we consider that three-quarters of all the reported cases were more or less successful, and still further consider that many of the cases were reported so soon after operation that the full results had not yet been realized; I think we are warranted in concluding that the proceeding promises a degree of success which we can count upon in very few of the operations which we are every day performing. When we take into account the serious and permanent disability for the cure of which the operation is recommended, the entire freedom from danger to life, and the large measure of success which has followed its performance, we are entitled, I think, to regard it as one of the best and most useful contributions to modern surgery.

ON THE USE OF BICHLORIDE OF MERCURY IN PHTHISIS.

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THE bichloride of mercury is not, I believe, in general use as a remedy in phthisis pulmonalis, but is, I think, of sufficient value to merit further investigation.

The only article written upon the subject that has come to my notice was that of Andrew H. Smith, M.D., of New York, in the *Medical Record* of September 20, 1884, in which he spoke of some experiments with the drug for the purpose of ascertaining the maximum dose that could be safely given, evidently with the idea of producing a favorable effect, by the germicidal action which the medicine is known to possess.

I have not used it with the same purpose in view, but rather with the expectation of promoting the action of the lymphatic system in removing deleterious matter from the blood and system at large, and of improving the quality of the blood.

Prof. Bartholow, in his *Materia Medica*, says that

"Mercury increases the number of red corpuscles, and improves the quality of the blood, providing it be given in small quantities, not often repeated, but any considerable quantity administered a sufficient time will affect the quality and composition of the blood: the red corpuscles are diminished in number, the fibrin loses its plasticity, the proportion of water is increased, and various effete materials, whose nature is unknown, accumulate.

"The metal has a selective action on the lymphatic system."

I am of the opinion that the lymphatic system is largely at fault in phthisis, and, indeed, the theory, that phthisis and scrofula are identical, is a very prevalent one.

I have, therefore, not considered the part taken by the bacillus tuberculosis in the use of this remedy, being first induced to use it, by noting its good effect in a case of suspected syphilitic phthisis.

I have used the following prescription, at times slightly modified, in thirty-three cases of phthisis, twenty of which were treated in hospital, the remain-

ing number as office cases, most of the latter being in the incipient stage of the disease:

R.—Hydrarg. bichlorid. gr. j.
 Ammonium chloride ʒiiss.
 Alcohol f ʒij.
 Glycerine and water to make f ʒiv.

Of this, a teaspoonful was given after each meal, well diluted.

In addition to this, I have usually prescribed an embrocation of oleum morrhue and oleum terebinthinæ, to be used over the chest twice daily.

The result has been, I believe, in every case (with the exception of one of laryngeal phthisis, well advanced before treatment was begun, which ended fatally) most satisfactory, the symptoms improving with as much regularity as we expect in cases of malaria under the judicious use of quinine, though of course not so rapidly. I do not remember a single case (except the one noted above) under the treatment for any length of time without seeing most marked improvement in the symptoms and general condition. The most unsatisfactory feature in the use of the medicine in my hands has been the impossibility of keeping the patients in view until a final result was obtained. Those who were treated in the office, upon being relieved of the disagreeable symptoms (which I know occurred in many cases), have either neglected to return for a continuance of the treatment as directed, from carelessness, or have shipped to some part from which it was impossible to return, if they so desired. Those treated in hospital, upon reaching that point at which they were able to resume work, have in almost every case shipped and have not again been seen. This renders a report of the changes in physical signs impossible, as such changes are necessarily slow. I have, however, used the remedy sufficiently to be convinced that its effects are more satisfactory than those of any other drug, or combination of drugs, with which I am acquainted for tubercular affections.

The final result of the treatment, if it could be followed as long as desired, I have not been in a position to determine, although in three hospital cases, two of them possibly syphilitic, the cough has entirely stopped, flesh and strength have been gained, and the patients have resumed their employment. Only one of these at the present time has any symptoms of chest trouble, and he coughs only upon fresh attacks of cold. They all present some dulness by percussion of the chest and some want of normal vesicular breathing. These signs, I hope, will gradually disappear.

I will briefly notice the following cases in which the action of the medicine has been especially favorable:

CASE I.—John Silva, aged 48 years, nativity West Indies, occupation seaman, admitted to the Marine Ward, City Hospital, November 13, 1884, is still remaining under treatment.

When admitted, he was suffering principally from diarrhoea, which had existed some length of time, and doubtless of a tuberculous character. He was extremely emaciated, had a troublesome cough, and was confined to bed for some time after being ad-

mitted. He had dulness at the apices of both lungs on percussion, with feeble breath-sounds over the upper lobes of both lungs. Under the treatment spoken of above, the diarrhoea very soon ceased to be troublesome, the cough has been remarkably improved, he has gained in flesh and strength, and if the improvement continues, will soon be able to ship again. An interesting feature of the case was a tympanitic distention of the abdomen, which came on about a month ago, during a time when the bichloride was not being used. This swelling during the last ten days, under the hypodermic use of the remedy, has steadily disappeared, the improvement, I think, being due to its action on the lymphatic glands of the intestines.

CASE II.—Vicenta Tanda, aged 23 years, native of Spain, occupation seaman, was admitted to hospital December 22, 1884; discharged January 10, 1885. He has been at odd times under treatment as an office patient for phthisis, but neglected to return for medicine, not having received treatment since October 18, 1884. When admitted to the hospital he presented a distressed and shrunken face, of a pale bluish, unhealthy color, with heavy dark lines, and depressions under the eyes, glands in the submaxillary region indurated, painful, and the size of walnuts, a very troublesome, hoarse cough, and considerable expectoration of a tenacious character. His appetite was very poor; he was weak and emaciated. Dulness on percussion was noted over both lungs, generally distributed, and a corresponding lack of vesicular sounds on auscultation. Within three days of the time when treatment was begun (the bichloride hypodermically, and oil externally) a considerable change for the better was noticed, and when discharged, after twenty-one days of treatment, he looked and felt like a different man, the cough and other troublesome symptoms having disappeared to a remarkable degree.

CASE III.—Andrew Taylor, aged 45 years, colored, was admitted to the City ward of the hospital, not being a patient of the Service, in June, 1884. He was in the last stage of consumption, delirious, extremely feeble in strength, with some fever, and was confined to bed.

The patient, under the bichloride $\frac{1}{32}$ grain, began at once to improve; in a few days was sitting up, and in about three weeks went home of his own accord.

From my experience in the administration of this drug in phthisis, I am of the opinion that if given internally, its dose should be not greater than $\frac{1}{32}$ grain three times a day, or only twice a day if it is to be continued for more than two weeks without an intermission. I believe it is better not to produce any of the characteristic toxic or inflammatory symptoms which follow the prolonged or over-administration of the remedy. I have recently, in a few cases, substituted the hypodermic for the internal method of giving it, and, from a limited experience, think the former has some advantages which the latter has not. It is, however, quite painful when used with the needle, so much so that it would be hard work to induce many patients to submit to it for any length of time. The albuminate, made with the

corrosive sublimate and the white of egg, is less painful than the solution in water or alcohol.

Since the above was written, I have added to the albuminate injection, for the purpose of relieving pain, in one case, two drops, in another, four drops, of a two per cent. solution of hydrochlorate of cocaine, with the following result: In the first case the pain did not begin until an hour after the injection, lasted but one hour, and was less severe than usual. In the case in which four drops were used the patient reported very much less pain than on previous occasions.

If the hypodermic should prove the more valuable method of administration, the cocaine may, to a large extent, remove the principal objection to its use in that way.

MEDICAL PROGRESS.

CHINOLIN AS A REMEDY IN DIPHTHERIA.—DR. JUL. DONATH, in the *Wiener med. Presse*, of January 18, 1885, after reviewing the results reported by numerous physicians on chinolin as a remedy in diphtheria, and which are in the main favorable, gives his own conclusions as follows. Notwithstanding its favorable effect upon the local manifestation of the disease, it does not in all cases exert a similar beneficial influence upon the general infection, of which the most reliable symptom is the appearance of albumen in the urine. Whether the sequelæ and complications of the disease are less severe under the chinolin treatment, Dr. Donath is unable to decide. However, in no case in which the remedy was used, did the disease attack the larynx, nor to any extent, worthy of mention, invade the nose, or reach the middle ear through the Eustachian tube. Further, it is worthy of note that the mortality of the disease was, in the same epidemic, before the employment of chinolin, 35.2 per cent., and after its introduction 16.6 per cent. It, therefore, appears worthy of further trial.

SUGGESTIONS AS TO THE OPERATION OF ABDOMINAL SECTION.—DR. THOMAS SAVAGE, in *The British Medical Journal* of Jan. 31, 1885, after reviewing a year's work in abdominal surgery, comprising one hundred and four cases with nine deaths, concludes his paper as follows: We are learning, if we have not already learnt, to look on acute peritonitis as a symptom of some organic change, and not as a disease in itself. And this is well for our patients, because operative measures can do much for it. We shall, ere long, regard so-called "idiopathic peritonitis" almost as a curiosity.

To obtain success in abdominal section, the conclusion of another year's work impresses upon me more and more forcibly the importance of insuring that the peritoneum shall be kept "clean and dry." There must be in many cases a certain amount of oozing, which will become absorbed; and I always feel happier when I think there will be little or none. But much more dangerous than this are the small escapes, during the operation, of fluid or blood, if allowed to be left behind. I think I am more particular than formerly in my sponging. A sponge deep down in Douglas's space, before adhesions are separated and blood escapes, will

catch some fluid which might escape extraction afterwards. I also endeavor to press, as I proceed, a sponge or sponges into the bed out of which I have picked adherent tumors. The sponge soaks up what is effused, and, by its pressure, tends to restrain further effusion. One principal advantage from washing out the pelvis with warm water, arises from the property that the water has of floating the small clots from the deep recesses up to the surface.

I am never afraid of my sponges; I attend to them myself, and so I know the life-history, as it were, of every one of them, from the moment they leave the shop where I purchase them, until they do service in an abdominal cavity.

RHEUMATIC TYPHLITIS.—DR. E. DE BOURGARDE DE LA DARDY, in a memoir on Rheumatic Typhilitis, establishes definitely the pathological existence of this affection, which hitherto, though not denied, has not been adequately elucidated. The conclusions of his interesting work are as follows: The rheumatic principle may be specially localized in the cæcum and produce a typhilitis which may be designated as *rheumatic*; rheumatic typhilitis is very frequently preceded or followed by rheumatic manifestations in various organs, or in the articulations; it may originate without complication of other parts, but in this case it attacks almost exclusively those who have previously been subject to other manifestations of rheumatism. Rheumatic typhilitis has special characteristics by which it may easily be distinguished from other inflammations of the cæcum; it generally is not serious, and terminates by resolution after two or three weeks.—*L'Union Médicale*, Jan. 22, 1885.

CONGENITAL SACRAL CYST.—DR. GEORGE R. FOWLER, in the *Annals of Surgery*, for February, 1885, reports a case of congenital sacral cyst, on which he operated without success. The case is interesting as well as rare, inasmuch as examination showed the entire absence of the lower sacral vertebræ and coccyx, and, in addition, the anterior cyst wall was adherent to, or, more properly speaking, formed a part of the pelvic peritoneum.

The plan of treatment followed was the only one from which any hope of benefit could be derived, Dr. Fowler concurring with Sir Benjamin Brodie in the opinion that unless the entire growth be extirpated, it is worse than useless to attempt to operate at all.

The case affords but another example of failure due to the impossibility of definitely determining beforehand the exact attachments of the growth.

THE RECENT EPIDEMIC OF CHOLERA.—At a late meeting of the Académie de Médecine de Paris, M. PROUT concluded the reading of the medical reports upon the last epidemic of cholera. The conclusions arrived at are that:

1. Cholera was imported into many of the cities and towns mentioned in the reports.
2. Water has played an important part in the transmission of the disease.
3. The intensity of the epidemic has been in direct relation with the unsanitary condition of the contaminated localities.
4. The cessation of the epidemic in infected regions

can in great part be attributed to hygienic precautions and to disinfection.—*L'Union Médicale*, Jan. 29, 1885.

ENEMATA OF TANNIN AS AN ABORTIVE OF CHOLERA.—CANTANI, in the *Gazzetta degli Ospitali*, 1884, No. 86, strongly recommends injections of tannin as an abortive of cholera. This method of treatment has been tried with great success by his colleagues, the diarrhœa incident to cholera being always checked.

The formula, according to which the preparation is made, is the following:

| | |
|-----------------------------|---------------|
| Warm water (boiled) | 2 quarts. |
| Tannin | 45 to 90 gr. |
| Gum arabic | 3 iss. |
| Laudanum | 30 to 50 gtt. |

Cantani and his colleagues have found that the cholera infection, at least in the late epidemic, begins in the colon. This is, moreover, confirmed by the investigations of Koch—who found pathological changes principally to exist in the neighborhood of the ileo-cæcal valve. The circumstance that a single enema of tannin is sufficient to destroy the infection, leads Cantani to the conclusion that it not only acts as an astringent, but also as an acid, and gives to the contents of the colon an acid reaction and thus hinders further production of the cholera germs. After serious secondary changes have taken place the abortive treatment does not give favorable results. After the great loss of fluids and a consequent dry state of the tissues, hypodermic injections constitute the only hope for recovery. These must be resorted to before the heart-muscle has undergone change, the chemical composition of the nerve centres altered, and before the destruction of blood corpuscles renders successful treatment impossible.—*Centralbl. für klin. Med.*, Jan. 17, 1885.

AGARICINE IN THE NIGHT-SWEATS OF PHTHISIS.—M. SEIFERT has found agaricine to be useful in controlling the night-sweats of phthisis.

He employs it as follows:

| | |
|--------------------------|-------------------|
| Agaricine | gr. $\frac{1}{2}$ |
| Dover's powder | gr. 100 |
| Mucilage | gr. 60 |

Divided into 100 pills.

In almost every instance the effect is manifested after the administration of one pill, and two pills never fail to exert a beneficial influence. M. Seifert also alternates agaricine and atropia with good results.—*Journal de Médecine de Paris*, February 7, 1885.

FACIAL NEURALGIA TREATED BY NERVE VIBRATION.—DR. W. H. NEALE reports a case of facial neuralgia, in which marked improvement and probably cure resulted from treatment by nerve vibration. Drugs after long trial being found useless, the treatment under consideration was resorted to. All drugs being abandoned percussion was resorted to, and a small white ivory disk with about ninety vibrations to the second was used and applied to the spots at which most pain was felt. The pain at first was intensified, but gradually disappeared, and after a treatment of about three weeks the patient was entirely cured, and, at the end of four months still continues well.—*Practitioner*, November, 1884.

OIL OF GAULTHERIA IN RHEUMATISM.—DR. LEUBUSCHER has reported a long series of cases of rheumatism of the joints, in which he has used the oil of gaultheria with as good effect, in every instance, as heretofore was obtained with salicylate of soda. Humming in the ears and difficulty in hearing were also observed as concurrent effects.—*Wien. med. Presse*, Jan. 4, 1885.

SULPHATE OF COPPER IN OBSTETRICS.—DR. CHARPENTIER proposes to employ this salt in solution of 1 to 500 as an antiseptic of the first rank and which will be of signal service in obstetrics.

Its effect, he says, when used for vaginal or intra-uterine injection is entirely harmless. It has also valuable properties as a hæmostatic and astringent, and may be substituted for the perchloride of iron. The solution for this purpose should be of 1 to 100 heated to a temperature of from 96° F. to 100° F.

The injection should be continued eight or ten days, at intervals during each day, unless other effects than reduction of temperature and diminution of the pulse rate be observed.

In surgery it is valuable as an antiseptic, especially in extensive thrombus of the vulva, and in fetid abscess of the urethro-vaginal septum, even where solution of carbolic acid has failed to be of service.—*Journal de Médecine de Paris*, February 7, 1885.

TREATMENT OF EPILEPSY WITH OSMIC ACID.—WILDERMUTH, in the *Berlin. klin. Wochenschr.*, reports having used osmic acid in the treatment of epilepsy for two years. The remedy was administered internally, and also in the form of osmiat of potassium, in pills or bolus, each pill containing $\frac{1}{8}$ grain of potassium osmiat, and increased up to a quarter grain. The acid was previously given in a watery solution.

Trial was first made upon ten aged epileptics; seven showed no results; in two cases the attacks became less frequent; in one an extremely severe attack followed the administration in large doses. This was succeeded by decrease and diminution of the attacks and their final disappearance with improvement of the mental condition. Of three cases whose treatment with osmic acid is published, two show marked improvement both in diminished frequency and severity of the attacks, while in the third no results are yet noted. Unfavorable sequelæ have never been noticed.—*Allgemeine Wien. Med. Zeitung*, January 20, 1885.

THE PREATAXIC PERIOD OF SYPHILITIC TABES.—PROF. FOURNIER, after reviewing the different manifestations of syphilitic tabes previous to the appearance of ataxia, makes the following *résumé*: The ataxic period of syphilitic tabes covers a period which may vary between some months and thirty years. It is characterized by an invasion of isolated symptoms on the part of the organs of sense and the cerebro-spinal system and the genito-urinary apparatus. These symptoms frequently pass unnoticed, and it is only by careful observation that they can be appreciated. Recognition of them is very important as the only means of determining the preataxic period, and as offering the only time at which treatment with hope of cure can be instituted.—*Révue Médicale*, January 17, 1885.

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ENTERECTOMY AND ENTERORRHAPHY.

IN the issue of THE MEDICAL NEWS for February 21st, we made some editorial comments upon a successful laparotomy and enterorrhaphy for gunshot wound of the small intestine, which called forth a letter from an esteemed correspondent, published in the issue of the following week, in which we are credited with favoring, positively and without qualification, the resection of the injured parts and uniting the ends with sutures, to the exclusion of the formation of an artificial anus. The correspondent further states that there is not an unanimity of opinion upon the proper practice to be pursued in operations upon the intestines; he quotes Whitehead and Reichel as being opposed to resecting, suturing, and returning the gut, and pays us the compliment of asking that we present the evidence and teaching upon this most important point of progressive surgery. As the subject is really one of great practical interest, it gives us pleasure to comply with his request, particularly as we feel that the desired information will be appreciated by other surgeons.

At the outset we must declare that we did not express an unqualified and positive opinion in regard to an exclusive method of treatment of shot wounds of the intestines. In the article in question, we distinctly stated that after an exploratory laparotomy, "if the gut be opened the wound can be closed with sutures, and hemorrhage arrested, thereby materially enhancing the chances of recovery. When the perforations are in close proximity to each other, the affected portion of the gut should be excised, the divided ends be approximated, and the coil be returned into the belly. The formation of an artificial anus, as attempted by Lloyd, is not desirable."

The opinion as to suturing, with enterectomy, in shot injuries was based solely upon experiments upon animals, not a single example having, so far as we know, occurred in the human subject. In the experiments of Parkes upon dogs, which may be found in THE MEDICAL NEWS for May 17, 1884, there are several illustrations showing, first, most extensive and severe lacerations produced by bullets of small calibre, the entire circumference of the bowel being at some points entirely destroyed; and, secondly, multiple perforations so closely situated that only half an inch or less of the wall of the intestine separates them from each other. In all such cases the extensive laceration can only be treated by excision of the damaged part, if the wound be single, or by excision of a coil of the intestine when the wounds occur close together. Ordinary suturing under such circumstances will not answer, first because of the constriction of the gut which would ensue; and, secondly, because the wall of the gut would be liable to slough. Hence, in cases of multiple perforations occurring close together, Parkes successfully removed in several instances ten inches or more of the intestine, while, when the openings were widely separated, and much damage done at each point, several resections, just sufficient to include the injured portions, were made. The practice of Parkes, we take it, is eminently proper, and the rule of excision should be absolute if the mesenteric artery supplying the injured area be divided, since the gut will become gangrenous, as has happened in at least five cases of pylorotomy, in which death was due to mortification of the transverse colon from the cutting off of its arterial supply. In simple, uncomplicated wounds, on the other hand, the case of Bull shows that suturing alone will suffice.

In the letter of our correspondent it is stated that Reichel has collected 121 cases of resection of the intestines, the conclusion being that the two ends of the bowel should not be united at the time of resection, but that an artificial anus should be established. On referring to the original paper, contained in the *Deutsche Zeitschrift für Chirurgie*, Bd. xix., 1883, we find that the conclusion is based upon the very proper assertion that sutures should only be used upon sound intestine, and that as the coats of the bowel are diseased or softened in strangulated hernia, intestinal obstruction and tumors, resection and suturing are contraindicated. The management of shot wounds is not even referred to.

IN THE MEDICAL NEWS for February 2 and March 15, 1884, we directed attention to enterectomy with enterorrhaphy for artificial anus and for gangrenous hernia. Since those dates, we have added other cases to our lists, and are now able to confirm the statements made in those articles. Of 85 operations for gangrenous hernia, 51, or 60 per cent., died,

while of 65 for artificial anus, 22, or 33.84, succumbed. These facts indicate, as pointed out by Reichel, that the damaged condition of the gut in the immediate vicinity of the mortified portion is the chief cause of the greater mortality of the former operation, through the giving away of the stitches and the consequent fecal effusion. Hence, Reichel suggests that before resection be practised the gut be drained and kept moistened with an antiseptic agent until its normal condition in the vicinity of the gangrenous part is restored. Whether this course be pursued or not, the success of the operation will greatly depend upon cutting through and suturing sound tissues, even at the expense of removing a large amount of the canal, which appears to be a matter of no moment. Even with this large mortality—nearly 60 per cent.—circular resection and suturing of the gut in gangrenous hernia is less lethal than the establishment of an artificial anus for the same condition, the mortality of which is placed at 80 per cent. by Benno Schmidt, and at 86 per cent. by Ill. In favor of the former operation, it is, moreover, to be said that, if successful, the recovery is absolute, and that a secondary operation for the relief of an artificial anus is dispensed with.

In the operations that have been practised for the relief of carcinoma of the large intestine, resection with suture also shows a lower death-rate than the establishment of an artificial anus. Thus, the cæcum and the ascending, transverse, and descending colon, and the sigmoid flexure have been excised and stitched in at least 18 instances, with 8 deaths, or a mortality of 44.44 per cent., the operators having been Billroth in 3 cases, Kraussold, Czerny, and Schede, each in 2 cases, and Keybard, Gussenbauer, Baum, Fischer, Crédé, Thiersch, Treves, Rehn, and Sydney Jones, each in 1 case. In only one, that of Baum, was the fatal issue due to the sutures, only six, instead of about thirty, having been inserted, and death having occurred from fecal extravasation. In all the others, the patients died of shock, and the sutures were properly applied. How well they do their work is shown by the case of Treves, in which, on death in twelve hours, there was no leakage, although the colon at the site of the sutures was distended with fluid feces.

Colectomy, or cæcectomy, with the establishment of an artificial anus, on the other hand, has been done by Billroth in 2 cases, and by Volkmann, Bryant, Marshall, Martini, Maydl, Lammiman, and Whitehead, each in 1 case. Of the 9 cases, 5 or 55.55 per cent., died, the mortality being greater by 11.11 per cent. than for resection and suture, and this despite the fact that the belly was opened in the former cases and the loin in the latter.

These data, together with severe test of the efficacy of excision and suturing afforded by pylorrec-

tomy, show that the conclusion of Reichel is not sustained, and that, with the evidence before us, the operation of excision, with suture of the divided ends, and return of the bowel into the abdomen, is safer than the formation of an artificial anus in cases of strangulated gangrenous hernia and in examples of obstruction of the large bowel by carcinoma.

We regret that want of space compels us to refrain from entering into a description of the technical details of the operation, but we may refer our readers to papers on the subject by Treves, in the *Medico-Chirurgical Transactions*, vol. 66; by Marshall, in the *Lancet* for May 13, 1882; by Reichel in the *Deutsche Zeitschrift für Chirurgie*, Bd. 19; by Bouilly and Assaky, in the *Revue de Chirurgie*, Nos. 5 and 7, 1883; THE MEDICAL NEWS for March 15, 1884, and by various authors in the *Verhandlungen der Deutschen Gesellschaft für Chirurgie* for 1882 and 1883.

DEATH OF THE FETUS FROM DELAY IN DELIVERY OF THE BODY.

DR. SCHULTZ contributes to the February number of the *American Practitioner* an instance of death of the fetus from the delayed expulsion of the body caused by uterine inertia. The case reported is not an anomalous one; indeed, it is not improbable that this accident, though by no means frequent, is, on the other hand, not very rare, and that there are but few obstetricians who have not met with a greater or less number of cases of difficult delivery of the shoulders. They, indeed, are very fortunate who have never seen a death from the delay incident to it. The treatment of these cases is then a most important practical question. In its discussion we shall lay aside those examples of great disproportion between the foetal body and the birth canal, as, for example, when tumors of the fetus, or ascites, delay or prevent the expulsion of the body.

The history of the cases in which a failure of uterine force results in retention of the shoulders after the head is born, is in some instances that of a protracted labor, the uterus having become exhausted by long efforts, and almost entirely ceasing to act after expelling the head. In other cases, the head has been delivered by forceps, because of failure of uterine action; and in many such, failure has been brought about by the too free administration of an anæsthetic, this agent having been given to the extent of abolition not only of sensibility, but also of volition, and almost of uterine contractions, which at least have become feebler and less frequent. Indeed we believe that many a child's life has been lost by the unrestrained use of chloroform or of ether in labor.

The danger to the child arises from compression of the chest, or from pressure on the cord, which may

encircle the body once or oftener, and thus render it more liable to have its circulation arrested.

To understand how we are to relieve the child most quickly and safely from its imminent peril, we must recognize the mechanism of labor in the delivery of the shoulders, for after this no delay usually occurs in the expulsion of the body. The passive movement of the foetus in the mechanism of labor after delivery of the head, is rotation of the shoulders from the pelvic transverse to the pelvic antero-posterior diameter. The uterine contractions, the most important and active factor in causing such rotation, being weak or absent, we substitute for the *vis a tergo*, a *vis a fronte*; that is, with our hands we draw the foetal head farther out, assisting, it may be, by suprapubic pressure, the descent of the shoulders, and we may also endeavor directly in this traction to turn the occiput toward the mother's left or right thigh, according as the occiput was originally toward the left or right side of the mother's pelvis; but traction and pressure being well made, we may generally trust this turning to nature. This movement having been effected, the anterior shoulder will be found just emerging at the pubic arch, for we hold that in all cases of perfect perineum the anterior shoulder, notwithstanding the conflicting statements of some obstetric authorities, is born first. This shoulder, as well stated by Pajot, represents the occiput in delivery of the head, and as in the latter delivery the nape of the neck or the suboccipital region becomes the fixed point resting upon the pubic arch, so the part of the arm just below the shoulder rests upon the arch until the posterior shoulder and arm are delivered, while the body undergoes lateral incurvation, a movement corresponding to extension in the delivery of the head.

Once the anterior shoulder has taken the position mentioned, our efforts must be directed to the delivery of the posterior shoulder, and this end we seek to accomplish by raising the head and making slight traction in order to bring the posterior shoulder far enough down so that a finger can be introduced into the axilla and traction thus made. But if we fail thus to reach the axilla, we may, as advised by Spiegelberg, and as taught by the late Professor Hodge, push the anterior shoulder in behind the pubic joint, thus bringing the neck of the child in the pubic arch, and causing it to press against the subpubic ligament, and by this means the posterior shoulder can usually be brought to the margin of the perineum. This having been accomplished, the head is carried backward, when the anterior shoulder again comes just outside of the pubic arch, and delivery is easily effected.

In some cases a blunt hook placed in the axilla may be necessary, only one must be careful, as advised by Spiegelberg, not to act upon the

humerus on account of the risk of detaching the epiphysis.

Jacquemier taught that after the head is born two methods are offered: the one, traction upon the head,—it sometimes succeeds, but often fails; the other, traction by the fingers in the axilla. He looked upon the latter proceeding as only preliminary to the disengagement of the arms, drawing upon which the trunk is delivered. He thought this method not only furnished the best means of exerting traction, but also very advantageous by lessening the size of the chest. Charpentier endorses the practice, but frankly states the occurrence of an accident in a case in which he pursued it—fracture of the humerus. He also mentions that traction by the finger in the axilla caused paralysis of the opposite arm; the fracture was cured in nine days, the paralysis in four months. Spiegelberg, wisely, as we think, rejected bringing out the arms, on the ground of danger of fracture of the bones, or injury to the epiphyses, holding that if there was room for this manipulation, there was room for delivery without it by other methods. If the child be dead, the only question as to delivery is to use those means which will be safest and best for the mother.

THE DIFFERENCE BETWEEN THE FALSE MEMBRANE OF DIPHTHERITIC AND THAT OF CROUPOUS LARYNGITIS.

PROF. VIRCHOW has recently taken occasion, before the Berlin Medical Society, to express himself pointedly upon the difference between the tracheal membrane found in croup, and the so-called false membrane in diphtheria of the fauces. The former is a true fibrinous membrane found on the surface of the trachea, and, under favorable circumstances, can be expectorated. The latter is something altogether different. It is a necrotic surface which gradually separates itself, not by a process of simple exfoliation, but by ulceration. Diphtheritic, unlike croupous membrane, can never be forcibly separated from the fauces without leaving a raw surface of greater or less depth. Moreover, cases of diphtheritic bronchitis extending even into the parenchyma of the lung have been observed, in which the false membrane consisted of a necrotic layer penetrating the tissues to a varying depth, instead of the usual croupous process attended by the presence of the superficial easily separable false membrane.

As to the question of infection, Virchow held that while we have not yet been able to cultivate the parasite of diphtheria, it is true that the diphtheritic focus, let it be as small as it will, is full of small granules, which he does not hesitate to regard as parasitic organisms although he formerly regarded them as exudation granules. Certainly they can be very easily inoculated. To prove this one has only

to introduce them upon the surface of the mucous membrane, or on a wound in it, when there promptly succeeds a process in which similar granules are invariably present, just as is the case with other forms of parasitic inoculation. These granules are entirely wanting in the true croupous membrane.

For these reasons he considers the two to be totally different processes. He believes, however, that the diphtheritic process, if quite superficial, may also be accompanied by a fibrinous exudation, but not when deep-seated, because the bloodvessels of the mucous membrane are entirely occluded so that circulation, and therefore exudation, is impossible.

When the diphtheria, therefore, is superficial, the two processes are identical, so far as the formation of false membrane is concerned, but the moment the diphtheria is deeper they again differ, because the exudation ceases. Virchow further believes that the granules in the necrotic or diphtheritic membranes are probably insoluble in digestive and other fluids, while the fibrinous exudate is. Practically, however, this fact avails us little, because in the pharynx, where they could be reached, the true fibrinous membranes are least likely to occur, and in the trachea they are too remote to be influenced by available solutions.

GENERAL GRANT'S ILLNESS.

SINCE OUR report of last week, GENERAL GRANT'S condition, we regret to record, remains unimproved, and we find nothing in the history of the progress of the case upon which to base a hopeful prognosis. The ulceration in the right anterior pillar of the fauces, we are authoritatively informed, has progressed, and the mucous membrane of the hard palate is invaded by the induration, which varies from day to day, being sometimes less and sometimes greater. The induration of the tongue has undergone but little, if any, ulceration. The glandular enlargement, on the right side of the neck, is about one and one-half inches in its longest diameter, and has increased but little, if at all, in size since it was first observed in the autumn.

The diagnosis of the affection from which the General suffers, rests between epithelioma, lupus, and scrofulous or tubercular ulcer, specific infection being entirely out of the question. We think, however, that this expression of a doubt arises rather from reluctance to abandon all hope than from any actual uncertainty as regards the epitheliomatous character of the disease.

The only changes which the disease has undergone during the past week are the slight increase of the area of ulceration in the anterior pillar of the right fauces. The General has suffered from loss of sleep; and his nights have been bad, although there has not been much pain. The question of operative

interference is not considered, but it may be deemed advisable to divide the lingual nerve for the relief of pain, in case it becomes a prominent symptom.

THE QUESTION OF VIVISECTION.

ANTIVIVISECTION literature grows apace. As the antivivisectionists do not think and reason, but only feel and declaim, as they are happily oblivious of facts, and mistake a vague sentimentality for scientific knowledge, the only limit to their productive activity is the boundary imposed by the credulity of their followers. The medical members of this confraternity of hysterical enthusiasts and humanitarian sentiment drivers seem to be actuated by two designs: the desire to enjoy the sensation of a personal goodness superior to that of their benighted medical brethren; the attempt to pose before the public as reformers with a lofty mission.

The latest production of this sentimental school has recently been published in this city, and is entitled "The Question of Vivisection. Was the Act of the British Parliament in Restricting Vivisection Inconsiderate and Unnecessary?" It is not only characterized by monumental ignorance of the "question," but it misrepresents, in the most barefaced manner, the opinions of well-known authorities. That this severe judgment is justified, is fully confirmed by a comparison of the author's statements with the published record. Thus on page 8 of this remarkable pamphlet, we find the following sentence:

"Neither can this cause any surprise when an Owen, a Ferguson, a Ferriar [Ferrier], a Darwin, a Bernard, and others, having similar experience, have been frank and independent enough to confess the inadequacy of experiments upon living animals to establish a reliable diagnosis, and, as a sequence, a reliable therapeutical treatment of disease. In this view, the preëminent experimentator, Virchow, concurs," etc.

This blundering attempt to make Bernard an opponent of vivisection is simply ludicrous. If its author, or any of our readers, will consult Bernard's *Introduction à l'étude de la Médecine Expérimentale*, Paris, 1865, p. 218, he will read that, of which the following is a literal translation:

"Experiments on the higher animals in our day throw light on the questions of special physiology and pathology, which are applicable to practice—that is to say, to hygiene or to medicine. . . . The experiments on animals with deleterious or noxious substances are very useful and perfectly conclusive for the toxicology and hygiene of man. The researches on medicaments or toxic agents are equally applicable to man, from the therapeutic point of view; for, as I have shown, the effects of these sub-

stances are the same in animals as in man, except the difference in degree."

Who, besides the author of this pamphlet, does not know that Ferrier's title to fame rests on his experimental work in animals, done to establish cerebral localizations? Do we not all rely on this work to fix the site of cerebral lesions, and was it not utilized but the other day to determine the situation of an intracranial growth removed by the trephine and knife of the surgeon guided by the same information? Is it not equally absurd to quote Virchow in the same breath, when the ink has scarcely dried on his elaborate paper defending the practice of vivisection?

The antivivisectionists should seriously ponder the weighty words of Mr. Matthew Arnold on "clear thinking and straight seeing." They should learn to appreciate this fundamental truth—that it must be quite as meritorious to employ animals to improve the mind as to nourish the body, or do they believe that man's intellectual powers are of less importance than his somatic functions? We doubt if they impugn the humanity of the butcher, unless the matutinal steak proves to be tough to the teeth and unsatisfying to the stomach.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, March 5, 1885.

THE PRESIDENT, A. JACOBI, M.D., IN THE CHAIR.

DR. WILLIAM C. JARVIS read a paper on

THE ETIOLOGY AND TREATMENT OF NASAL CATARRH, WITH SPECIAL REFERENCE TO THE DEVIATED SEPTUM; WITH PRESENTATION OF INSTRUMENTS.

The impression, he said, had become quite prevalent among the public, and to a certain extent in the profession, that chronic nasal catarrh was incurable. Such was by no means the case, however, when the affection was treated in a rational manner, which involved the discovery and removal of the cause giving rise to it. In a paper on hypertrophic nasal catarrh, which he read before the American Laryngological Association in 1880, he had referred to deviated septum as a very prominent factor in the etiology, and described a treatment by novel methods. His subsequent experience had only confirmed him in his conviction of the very great importance of this factor. As to the character of the abnormal condition of the septum, it might be osseous, cartilaginous, osteo-cartilaginous, and hypertrophic. In situation, the deviation might be localized or general throughout the septum. The purely osseous form was rarely met with, being almost invariably associated with the cartilaginous. The cartilaginous was by far the most common of all.

The factors concerned in the production of deviated septum were, first, pressure-irritation; and, second, defective nasal drainage. Of the effects of pressure, he

had spoken particularly in the paper referred to. Although the turbinates might not be found pressing upon the tissue over the septum, the existence of this form of hypertrophy afforded, he thought, clear proof of contact at some period of the disease; a certain amount of turbinated hypertrophy was always found in connection with it. He had a drawing taken from a patient, the right side of whose vomer was occupied by a cup-shaped hypertrophy, the depression on its surface being the impress of the inferior turbinate lying opposite. The inferior turbinate bone of the other side was enlarged and pressed against the vomer, the tissue over which had already commenced to thicken.

In speaking of the matter of defective nasal drainage, Dr. Jarvis described the peculiar anatomical formation of the parts below the nose, which gave them their adaptation to drainage. Thus the palatine prominence divided the passage into two gutters to conduct the mucus when it left the cavity of the nostrils, while the discharge was prevented from entering the larynx by the slight elevation made by the arytenoid cartilages, the cartilages of Wrisberg, and the folds of mucous membrane. The importance of this system of nasal drainage, he said, was very clear, and any disturbance of its balance would certainly give rise to trouble. Prominent among such disturbances was deviated septum.

Among the causes of the latter, he mentioned heredity and traumatism. Deviated septum might also be acquired. In regard to the first cause, he said that malformation of the hard palate was often transmitted from parent to child, and that it was not infrequently associated with deviation of the septum. No two palatine arches were exactly alike, but while there might be considerable variation without positive abnormality, the formation of the part in which there was an abrupt elevation along the line of the median raphe was the one which caused difficulty, because it was almost necessarily combined with a corresponding deviation of the septum, giving rise to chronic rhinitis. He then referred to a number of instances in which he had observed this malformation of the hard palate in several members of the same family, all of whom were the subjects of old catarrhal trouble. As a result of his observations, therefore, he dissented from the hypothesis that there was a constitutional diathesis which transmitted nasal catarrh. He had found that remarkable mental capacity was apt to be associated with chronic nasal catarrh, because a large cranial vault was not infrequently attended with unusually contracted nares. Early acquired catarrh, therefore, instead of being of scrofulous or diluted syphilitic origin, was likely to be due indirectly to unusual cranial development.

Traumatic deviation of the septum was most frequently met with among the lower classes of society, and he said he had yet to meet with the first professional sparrer or prize-fighter, however healthy he might be in other respects, who was not the subject of chronic nasal catarrh.

Acquired or induced deviated septum was the result of prolonged intranasal pressure from hypertrophied tissue, polypi and other tumors, the repeated introduction of the finger, etc.

Passing on to speak of the treatment of deviated septum, he said that no single method was suited to all

cases. To cure the catarrh dependent on it, it was necessary to remove the deviation. His ring-drop speculum was of service in dilating the nostril. The instrument which he most used for removing tissue was the *écraseur*, which he had described on previous occasions. The piano-wire which he now employed with it was of a very fine size. Combined with the *écraseur*, it was invariably required to use his transfixion needles, which were from one to four inches in length, straight and of various degrees of curvature. In order to economize time in certain cases, he had devised other instruments, such as his fenestrated cartilage forceps and beaked scissors, which were bent at the proper nasal angle for operating and observing. As bone blunted their keen edges, when osseous tissue was to be cut through he employed the *rongeur* forceps, which removed it by a kind of biting process. When the deviation was extreme, there was considerable danger of perforating the septum, and on this account he preferred the stellate punch in such cases.

The cutting was usually the simplest part of the operation; the great difficulty being the proper approximation and adjustment of the fragments. Ordinarily the pain produced by the *écraseur* was not great, but he had found cocaine of the greatest possible service, as a rule, in relieving it. He was in the habit of using Farcard's ten per cent. solution. In any case in which the pain was extreme, however, there was nothing so good for producing local anæsthesia as rhigoline, applied with a spray; pain being an absolute impossibility when this was employed. The objection to the use of rhigoline is its liability to explode when its vapor comes in contact with the light used to illuminate the nasal cavity. This, however, had now been obviated by an electric light, enclosed in a glass bulb, which he had devised, and which he now exhibited. It was maintained by the Foster battery, which was in reality a combined battery and accumulator. It was especially valuable on account of the long continuation of the current, and its inventor, Mr. Foster, claimed that it was not necessary to refill it more than once a year. In conclusion, Dr. Jarvis exhibited his rhinometer or nose measurer.

DR. FRANCKE H. BOSWORTH said that he must take issue with Dr. Jarvis on some points. He thought that it was about time to drop the use of the word "catarrh," which meant simply a discharge, but was made to cover the whole area of nasal diseases. The catarrh was merely a result of these various diseases. As to pressure-irritation in connection with deviated septum, in the number of the *American Journal of the Medical Sciences* for January, 1876, Dr. Harrison Allen had published a paper which excited a great deal of controversy, in which he concluded that two mucous surfaces coming into contact with each other give rise to the results claimed by Dr. Jarvis. For his own part, he did not believe that this pressure was the cause of trouble, and there were numerous instances that could be observed in which two mucous surfaces come in contact with each other without producing evil results. Pressure irritation, he was convinced, was of no weight in this connection until very late in nasal disease. As to the matter of defective nasal drainage, the nasal fluid was about as benign and unirritating as one as could well be imagined, and the cause assigned by Dr. Jarvis did not go down to the ultimate source of the truth. The points most

dwelt upon in the paper, he thought, were merely adventitious features of deviated septum. In nine cases out of ten, in which this existed there was catarrh. The use of cocaine, as now resorted to for the last three months, enabled us to eliminate swollen mucous membrane by its local effect on the parts, and permitted us to make a thorough examination of the exact condition present. He believed that a primary factor in the etiology was an interference with the normal respiratory function in the nose; the rarefaction of the air in the nasal passages leading to dilatation of the neighboring venous sinuses. He did not himself believe in a diathesis causing nasal diseases; but, unfortunately, Dr. Jarvis in speaking of the matter of heredity, had referred to the ulceration of the palatine arch, which was well known to be one of the effects produced by *mollities ossium*. In this case there was undoubtedly struma, resulting in softening of the bone, and the nasal catarrh was one of the adventitious results of the struma. The indication in the treatment was to remove the obstruction occasioning the nasal stenosis, and, of course, a great variety of instruments and methods might be employed for this purpose. In performing these operations, he was constantly in the habit of using cocaine, and almost invariably with complete success in abolishing pain. On account of the great expense of the drug, he used only a two per cent. solution; but by applying it to the parts to be operated on for twelve or fifteen minutes before commencing, he found that it acted in a perfectly satisfactory manner.

DR. S. O. VANDERPOEL, JR., referred to an article by Dr. Roberts, of Philadelphia, published in the *Boston Medical and Surgical Journal*, in which he described an operation for deviated septum consisting of division of the septum with a bistoury, and subsequent retraction of the parts by means of a pin introduced through the concave nostril. He had himself now employed it with very fair success in four cases. In a fifth (that of a small child) the pin was inadvertently pulled out by the attendant. In one of the cases the nostril was so occluded that he found it necessary to employ Adam's forceps to break up the septum before resorting to the pin. The pin, he thought, possessed a great advantage in the fact that when it was used it was not necessary to have any large foreign body in the nares, such as the usual nasal splints.

DR. D. BRYON DELAVAN said that he would have to take exception to the treatment advocated by Dr. Jarvis. He believed that deflection of the septum was due to a deviation of osseous structures, and many skulls that he had examined showed an extreme degree of deflection of the septum. But there are other changes involved, such as enlargement of the turbinated bone and the arch of the nose where the cavity was the wider; and he had observed that patients with deviated septum often breathed better through the narrower nostril than through the wider one. The bony structures thus being involved, it was not enough to remove merely the soft tissue, but it was also necessary to take away a portion of bone. It was impossible to replace a deviated septum when there was an enlarged turbinated bone on the narrow side. It seemed to him, therefore, that in many cases the method described by Dr. Jarvis was not equal to the exigencies of the situation.

DR. JARVIS remarked that his paper had evoked less

hostile criticism than he had anticipated. He quite agreed with Dr. Bosworth that the name catarrh was objectionable; but, as he himself had said some time ago, he thought it well to employ it on account of its long continued and generally accepted use, though not attaching any pathological significance to it. Moreover, in the paper, instead of always speaking of chronic nasal catarrh, he had alluded to hypertrophic rhinitis as a frequent condition. As to the fact of pressure-irritation resulting from prolonged contact of the parts, he was fully convinced of its existence and importance, not only from pathological researches, but from the physiological action of the turbinated bone which he had repeatedly observed in the living subject. He quite agreed with Dr. Bosworth that normal mucus was not irritating; but thickened mucus of an increased specific gravity would invariably cause irritation by toppling into the larynx and closing up the nostrils. In regard to the production of local anæsthesia, if cocaine was too expensive, rhigoline would prove perfectly satisfactory, and that could be purchased for sixty cents a pound. If the electric light described could not conveniently be obtained, operations could be done in strong sunlight, although, as a rule, artificial light was preferable. He believed that the osseous turbinated enlargement referred to by Dr. Delavan did occasionally occur; but it was the rare exception, not the rule, and he had personally seen only two instances of it. If the condition existed, the methods he had mentioned (particularly the use of the *rongeur* forceps) would be found sufficient for the purpose of removal. As to the association of mental capacity with chronic catarrh, he thought that enlargement of the cranial dome was apt to be combined with contracted bones of the face and a high-arched hard palate.

DR. GEORGE G. HOPKINS, of Brooklyn, reported

A CASE OF FIBROMA OF THE BREAST AT SEVEN AND ELEVEN YEARS.

The patient was a child eleven years of age, living in the West, who four years previously had had removed from the right mamma a hard tumor, by a physician who had since died. It was almost an inch in diameter, situated in the structure of the gland to the right and on a line with the nipple, and was pronounced to be of a malignant character. About six months after its removal (in 1881), a tumor of the left breast was first noticed, which continued to increase in size until 1883, when it was an inch in diameter. There was then apparently no further growth until last June, when it began to increase rapidly. Dr. Hopkins first saw the girl on the 1st of September, 1884, when he found that the glands of the axilla were already implicated. On the 6th of October, assisted by Dr. J. C. Hutchison, he removed the entire mamma, including the nipple and areola, and also four of the axillary glands. The operation was performed with antiseptic precautions, and the entire dressing was removed on the ninth day, when it was found that the wound had healed. Some of the catgut sutures employed had already dissolved, and the remaining ones were dissolved by the eleventh day, while the drainage opening closed up on the sixteenth day. Under the microscope the tumor showed the characteristic fibroid structure, and the interest of the case lay in the early appearance of the disease, as

there could be little doubt that the tumor which had been removed from the right breast was identical in character. In his work on mammary tumors, Dr. S. W. Gross stated that fibroma might appear as early as the age of twelve. Six per cent. of the cases recorded by him were under sixteen. Personally he pronounced the present growth to be fibroma, and said that he had heard of no previous case as early as seven years. The amputated breast and microscopic specimens from the tumor were exhibited. Dr. Hopkins stated that the mother of the child was the subject of uterine fibroids.

OBSTETRICAL SOCIETY OF PHILADELPHIA.

Stated Meeting, February 5, 1885.

THE PRESIDENT, B. F. BAER, M.D., IN THE CHAIR.

CALCULI IN THE FEMALE.

DR. J. W. SNOWDEN exhibited the stones and related the history of the case. He was called, June 1, 1884, to see Mrs. L., aged 23 years. She was born and has resided in a limestone region in New York:

Up to 13 years of age she was troubled with enuresis; wetting the bed almost nightly. After this she ceased passing her urine during sleep, but was obliged to rise for this purpose two or three times during the night. She could not retain her urine night or day after the desire to pass it came on. If she could not reach a convenient place, she would wet her clothes.

She married when seventeen years old. Two months after marriage she began to have cystic irritation and soon passed sabulous matter and small calculi. These symptoms continuously increased. Physicians whom she consulted said she had catarrh of the bladder, but none made an examination for stone. Once she was obliged to have a calculus removed which had become impacted in the urethra.

Two years ago she spent a summer in New Jersey, during which time she passed no gravel, but the irritation of the bladder continued. When he first saw her she was urinating very frequently, with more or less pain. She passed stones daily, with a great deal of sabulous matter. The urine looked as if there was a quantity of ordinary sand in the bottom of the vessel. He proposed an examination for stone, which she refused, peremptorily. He gave her benzoic acid, which entirely stopped the passage of the sabulous matter and relieved her in every way, but she still occasionally passed a small calculus. This marked relief lasted two or three months, when the irritation of the bladder became worse than ever. She could only pass her urine in the erect position and with as much effort as a woman in labor. He insisted upon an examination for stone, but the slightest touch excited such intense pain even when she was well etherized, that being alone he could not manage her, and he sent for Dr. Baer in consultation.

A calculus measuring about one and a half inches in its longest diameter was found in the bladder and removed by Dr. Baer after rapid dilation of the urethra. This afforded marked relief and she soon seemed entirely cured; but in a short time her urine began to dribble continually while she was in the recumbent position at night. During the day she retained and

passed her urine naturally. He advised her to get up at stated intervals and empty her bladder, which has gradually relieved this trouble. She is now quite well except that she urinates rather more frequently than is natural.

NEW YORK SURGICAL SOCIETY.

Stated Meeting, February 24, 1885.

THE PRESIDENT, ROBERT F. WEIR, M.D.,
IN THE CHAIR.

FIBRO-MYXO-SARCOMA OF THE TENDONS OF THE WRIST.

THE PRESIDENT presented a patient, married, eighteen years of age, who four years ago first noticed a tumor on the posterior surface of the left wrist. In 1882 she came under Dr. George A. Peters's care, who removed the tumor, and about three months afterwards, while the patient was yet in the hospital, he extirpated some cervical lymphatic glands which had undergone cheesy degeneration. The growth at that time was examined microscopically, and pronounced a myxo-sarcoma. It recurred within a year and a half, when the patient came, temporarily, under Dr. Weir's observation. Last fall she entered the New York Hospital. There was then a tumor lying over the wrist-joint, on the dorsal surface, about two inches in length, oblong in shape, and which had somewhat the feel of a compound ganglion. Pressure at the lower part of the tumor gave a sense of fluctuation, and at the upper portion the sensation of the presence of rice bodies could be detected to a slight extent. Dr. Weir resolved to extirpate the growth, and did so by making a long incision, and when he had reached the tumor he found that it was adherent closely to the tendons of the extensor communis digitorum, and dipped down into the tissues below, so that in removing it one of the tendons (the thumb's inner extensor) was divided and the wrist-joint opened. From the extent and general appearance a question arose as to its exact nature. It presented thickened tissue with a number of small growths from its inner surface, with a certain amount of gelatinous fluid in its substance. No free rice bodies were found. From the gross appearance it was thought possible, since Koenig had shown that the tubercle bacillus may give rise to ganglionic formations, that this might be one of those varieties of tumor, and the growth was subsequently examined with reference to this particular point.

The interest of the case centred not only upon the rarity of the lesion—that is, sarcomatous disease of the tendons, but also upon the somewhat apparent conflict of opinion with reference to the nature of the tumor. Dr. Peabody, the pathologist of the hospital, who had examined both the first growth removed and the present one, reported that it was a myxo-sarcoma. Two other pathologists had examined the tumor and reported that they found only granulation tissue. Dr. Hall, who had been much interested in surgical diseases of tubercular origin, had taken special pains in the examination of the neoplasm, and had presented the following report:

Gross appearance is that of gray gelatinous granulation tissue, closely resembling so-called fungoid granu-

lations. A microscopic examination shows large bundles of white fibrous tissue, wavy, and containing large spindle cells. The bundles cross each other in different directions, so that some are cut across transversely, some longitudinally, and some obliquely. Between these are masses of tissue consisting of small round and spindle cells, with abundant granular intercellular substance. Here and there throughout the section are small masses of adipose tissue. The tissue is moderately vascular, some of the vessels having well developed walls, and others having very thin or no true wall, resembling those usually found in sarcoma. Diagnosis: fibro-sarcoma.

October 8, 1884, inoculated two guinea-pigs with the fresh material in the left inguinal region, subcutaneously. A similar wound, without inoculation, was made just previously on a third guinea-pig, for control. All wounds were closed with catgut sutures, and healed per primam. January 2, 1885, one of the inoculated guinea-pigs found dead in box. On examination body well nourished, lymphatic glands not enlarged. No trace of tubercle in the internal organs or elsewhere. The other two guinea-pigs are well nourished, and show no glandular enlargements.

The patient herself shows no recurrence of the growth, and has full use of her hand. The function of the thumb is also perfect.

DR. G. A. PETERS remarked that the tumor which he extirpated was connected with the sheath of the tendon, and presented the appearances described by Dr. Weir.

DR. T. M. MARKOE then read a paper on

SECONDARY NERVE SUTURE.

(See page 285.)

DR. BRIDDON referred to a paper which he read before the Society two years ago, and in which he reported a case of secondary suture of the ulnar nerve, performed several months after the injury, which was produced by the patient falling and striking upon a broken glass tumbler. At the operation a small piece of glass was found between the severed ends of the nerve, and the proximal end was bulbous. No benefit whatever was derived from the operation. The man died a year afterwards from phthisis, and at the time of his death there had been no return of either sensibility or motion. He was unable to obtain an autopsy.

DR. L. A. STIMSON thought that the long-delayed return of function was a point to be borne in mind constantly. In one of his own cases, injury of the musculospiral nerve was followed by complete motor paralysis which lasted for more than three years, and then was succeeded by complete recovery of function by the muscles supplied by this nerve.

DR. MARKOE thought that the question of the possibility of natural restoration should be always borne in mind, and it is quite possible that many cases operated upon would have recovered after a long period. It was this fact which induced him to wait until one hundred and thirty days in one of his cases before operating. There were not, so far as he was aware, any statistical statements of the results of section of nerves in which no operation was performed.

DR. POORE asked with regard to the longest time that had elapsed after an injury in which an operation had been performed with any success.

DR. MARKOE replied that in Dr. Weir's case the operation was performed nine years after the injury, and in another case the operation was performed six years after the injury. Certain it was that some of these sections produced paralysis which was permanent. How we were to ascertain whether any given section would terminate in recovery or not, he was unable to say; and he thought, therefore, that, granting the possibility that the nerve might recover its power, the operation should be performed after waiting a reasonable length of time to see what nature could accomplish.

DR. POORE remarked that about one year ago he saw a child eight years of age who, five years previously, sustained a fracture of the head of the radius, and the bone had united at an angle. At the time of the injury pulsation of the radial was lost, which was shortly followed by ulceration of the hand and arm, accompanied with total paralysis of the extensors, which has persisted, and at time of examination the muscles on dorsal surface of forearm were atrophied.

DR. G. A. PETERS asked if additional damage had been done in any cases by the operation.

DR. MARKOE replied that no further impairment of function had resulted from the operation, and in no instance had death occurred as a result of the operation.

THE PRESIDENT called attention to two points in the technique of the operation. In his case he found great difficulty in overcoming the gap between the divided ends of the sciatic nerve which, after they had been trimmed off, were separated to the distance of two and a half inches, and which could only be overcome by liberating the nerve to a considerable extent and strongly flexing the limb; but, in addition to the sutures applied to the nerve itself, extraneous sutures in the soft parts outside were used, and were especially serviceable.

From the difficulty in approximating the ends of the nerve in that case, he was all the more disposed to resort to a suggestion that had been made, namely, to make a bayonet section in one of the nerves, splitting the nerve not quite to its free extremity, and turning it over and thus effecting the desired elongation. This has since been tried, and had been found to require the additional precaution in its employment, that when the nerve was so stretched a suture should be inserted into the free end to prevent it from tearing completely through.

CHOPART'S OPERATION.

DR. L. A. STIMSON presented a cast of a stump left by a medio-tarsal amputation, together with the dissected member. They were taken from a cadaver found in the dissecting-room. There is no history, but the stump was evidently an old one. The body was that of a man 50 or 60 years old. The cicatrix is horizontal, and fully half an inch above the line of pressure in walking. The face of the stump was covered with a thick, well-padded layer formed of the flesh of the sole; had a thick layer of epidermis; and showed no signs of present or previous ulceration. On dissection, the tibialis anticus was found much more wasted than the other anterior muscles, and its tendon was reduced to a small end adherent to the soft parts of the upper flap. The other anterior tendons were adherent to the cicatrix. The head was drawn upward, so that the anterior face

of the os calcis was directed downward and forward, lying in a plane inclined about midway between the vertical and horizontal planes when the limb was erect. The astragalus showed a corresponding degree of plantar flexion, and the range of motion in the ankle-joint was about 10°. Its scaphoid articular surface was firmly attached to the flap. There was a small osteophyte on the upper outer anterior border of the os calcis. The stump appears to have been a thoroughly useful one, notwithstanding the well-marked plantar flexion.

DR. MARKOE remarked that the specimen illustrated in a striking manner one of the objections which had been urged against the operation, namely, change in the position of the heel.

DR. SANDS said that the cicatrix did not seem to have been presented to the ground.

DR. STIMSON remarked that the point of pressure was well protected.

DR. SANDS asked if the specimen did not rather refute than sustain the objection urged against Chopart's operation by showing that the retraction had not been such as to cause the cicatrix to come into contact with the ground in walking.

DR. MCBURNEY remarked that some time ago he presented to the Society a patient upon whom he had performed Chopart's operation, and the result did not exhibit any of the defects said necessarily to accompany the operation; that is to say, the patient had complete control over the bones of the foot left, and was able both to flex and extend the stump. He could also present the original plantar aspect of the foot to the ground. At that time he made a statement, which he still felt like adhering to, namely, that the greatest importance was to be attached to the manner of treating the stump immediately after the operation, and not to allow the limb to rest with the muscles at the back of the leg having entire control. The stump should be firmly flexed throughout the healing process, so that the anterior tendons will become attached as low down as possible.

DR. C. A. PETERS asked how the flexion was secured.

DR. MCBURNEY replied that it was secured by the application of a posterior splint, the part presented to the sole of the foot turned upward to the ankle and fixed it in that position. The immediate splint was made of pasteboard, and secured with plaster of Paris. Even upon the dead subject, when Chopart's operation was performed, if the limb was held free there would be a noticeable dropping of the os calcis, with a bending downward of the anterior portion of the stump.

DR. MARKOE remarked that he understood that the objection to the operation was not because the original stump presented a badly situated cicatrix, but that by the contraction of the gastrocnemius, and also from the irregular face of the os calcis, it was gradually pushed back and came finally to press upon the ground in an unfavorable position.

DR. MCBURNEY said that Dr. Sabine, in one of his recent visits to the West India Islands, found that the operation was performed in that locality very frequently for the relief of certain diseases which affected the toes of negroes, necessitating amputation of the anterior part of the foot. He was told by local surgeons that the results were good, and that they had never seen twisting of the os calcis upon itself. The patient whom he pre-

sented to the Society could run upon his stump, and he had never had any artificial support.

DR. STIMSON called attention to the fact that the preservation of motion of the ankle-joint diminishes the friction of the face of the stump against the ground in walking.

HYDATIDS OF THE LIVER AND MESENTERY; LAPAROTOMY.

THE PRESIDENT presented a specimen accompanied by the following history:

Richard H., a native of England, twenty-six years of age, resident of New Jersey, was admitted to the New York Hospital January 21, 1885. The patient's personal history is negative. There was no special history with regard to diet, although he preferred rare meat to that which was well cooked. In June last he first noticed that his abdomen was beginning to increase in size, and the fullness was first noticed over the region of the liver. There was no pain in the enlargement, and it inconvenienced him only on account of its weight and dragging. Whether the patient had had more than the ordinary association with animals, dogs and sheep, said to be infested with the parasite which gave rise to hydatids, Dr. Weir was unable to make out.

At the time of admission the patient was a rather thin but healthy looking man, weighing one hundred and fifty-eight pounds. His abdomen and lower part of the thorax were much distended. The circumference of the abdomen at the umbilicus was thirty-six and a half inches; at the lower border of the ribs thirty-nine inches. The right lower ribs bulged outwards very much more than the left. On palpation a large tumor, the size of a man's head, was felt in the right upper part of the abdomen, and another, nearly as large, occupying the lower part of the abdomen, and between these tumors another, about the size of an egg, could be distinctly felt, which was freely movable over an area of several inches. The large tumors extended over beyond the median line toward the left side for several inches. On palpation a sensation of fluctuation could be detected, but it did not apparently communicate from one tumor to the other. No hydatid fremitus detected. A hypodermic needle was introduced and perfectly clear fluid withdrawn, which was negative by microscopic examination. Examination of the urine was negative. Diagnosis of cystic tumor of the abdominal cavity, probably hydatid, and probably involving the liver. Whether the tumors were independent or united was a matter of some doubt.

The question arose mainly with reference to the treatment; that is, whether puncture or incision should be made. After considering the matter, Dr. Weir resolved to resort to incision, and on the 24th of January he made an opening through the abdominal wall two inches and a half in length in the epigastric region, and when the tumor was reached it showed itself as a thickened white mass. The peritoneum was first secured to the edges of the abdominal wound by sutures all round, and then a large-sized trocar was plunged into the cyst, but only a few drops of clear fluid escaped. Had he succeeded in obtaining fluid with the trocar, he had intended to draw the tumor up as high as possible, open it freely, evacuate its contents, and sew its walls to the peritoneal surface of the abdominal wound. After the

canula was removed the edges of the opening were seized with the forceps and lifted up out of the incision, and the opening in the cyst was then enlarged to the size of the abdominal wound. Hundreds of amber-colored and transparent cysts escaped, varying in size from a pea to an orange. The quantity was not noted, as considerable escaped so that it could not be measured, but the entire quantity was estimated at from four to five quarts. The edges of the sac were then sutured to the external wound, and two large-sized rubber drainage-tubes inserted. Peat dressing was applied. The operation was begun with full antiseptic precautions, but had not proceeded far before the steam atomizer gave out, and it was continued without the further use of spray.

Jan. 25th, the patient complains of much pain in the head, and requires to be catheterized. January 25th, pain in the head continues, but the patient passes his urine. No peritonitis. Temperature rose this afternoon to 103.4°. The wound discharges hydatid cysts. Dressings are changed under spray when necessary. January 27th, urine contains about ten per cent. albumen. The wound was dressed under the spray, and more hydatid cysts were discharged. On the third day there was suppression of urine with elevation of temperature, and from this time the case progressed unfavorably, and the patient died ten days after the operation. On the eighth day after the operation the cyst cavity was washed out thoroughly with a bichloride solution, 1 to 5000. At that time it was discovered that the lower tumor was diminished in size. Until this time it had been considered a separate tumor.

The autopsy showed that the tumor was a large bilobed formation with a separate tumor which was in the mesentery, and that in the walls of this large mass, which had invaded completely the substance of the right lobe of the liver, quite a large number of hydatid cysts were found projecting into the abdominal cavity, so that if the patient had recovered it would have been only temporary. The liver was forced downward so that its upper surface looked forward and was adherent to the under surface of the diaphragm, and to the upper surface of the diaphragm the lower lobe of the right lung was adherent, a fact which pointed somewhat toward an effort of nature to effect evacuation of the tumor in this direction.

There were two points in the operation which Dr. Weir regretted not having observed. First, in not having made a more liberal incision in the abdominal walls for exploration, and into the tumor, by which it could have been evacuated more thoroughly, and which also would have enabled him to have lifted out more of the cyst wall and removed it. He believed that the patient's death was caused primarily by the noxious influence which all abdominal operations are apt to exert upon the kidney secretion, and, secondarily, by the septic processes in the contents, and that this latter could have been diminished by the removal of a large portion of the cyst. This would also lessen the chances of recurrence of such growths.

In the second place, it had been stated that kidney complications were more liable to occur in operations done under the spray of carbolic acid than when carbolic acid is not used. He did not think that the carbolic spray in this instance was a factor in the produc-

tion of a fatal result, as it gave out early in the operation; moreover, only a space of two and a half inches of cyst wall was exposed to its influence in even this short time. The renal symptoms occurred prior to the use of the spray employed when the dressings were changed.

DR. G. A. PETERS remarked that he was able to get a pulsation between the two large tumors, and regarded them as a single cyst.

CORRESPONDENCE.

DUDGEON'S SPHYGMOGRAPH.

To the Editor of THE MEDICAL NEWS.

SIR: In a review of Bramwell's work on *Diseases of the Heart and Thoracic Aorta*, in the *American Journal of Medical Sciences* for January, 1885, "J. C. W.," after stating that the author gave preference, in writing of sphygmographs, to "the convenient and portable little instrument of Dudgeon," goes on to say, "We confess that the latter has been a disappointment to us." This comment induces me to think it worth while to call attention to the following slight addition which I have made to the instrument:

In the specimen of Dudgeon's sphygmograph which I obtained, attachment to the wrist was made by a strap and buckle. In adjusting the strap, I found difficulty in getting the proper degree of pressure, and in avoiding displacement of the apparatus. These difficulties I have obviated by the use of a small tourniquet placed upon the strap. With this addition the instrument is very easily applied.

The cost of the instrument in London is £2 2s, in New York (imported) \$25. It would seem from these figures that it might be made here and sold, tourniquet included, for \$20 or less. Its simplicity of construction (any watch-maker could repair it), cheapness, compared with the \$40 Pond or \$75 Marey instruments, etc., and with the above-mentioned addition, its ease of application, are very material advantages. Yours truly,

R. VAN SANTVOORD, M.D.

26 E. 125TH STREET, N. Y. CITY,
March 6, 1885.

NEW INVENTIONS.

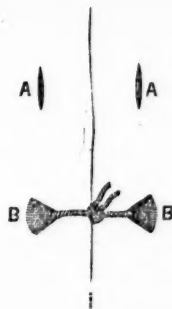
DESCRIPTION OF THE FLAT-CURVED NEEDLE AND OF A SUITABLE NEEDLE-HOLDER.¹

By DR. HAGEDORN,
OF MAGDEBURG, EUROPE.

THE needles which were formerly used for surgical sutures were either round or oval. They were curved on the surface flat, with a double cutting edge, and finished to a sharp point. The cutting edges and the flat surface were in the same plane. The small wound made by the puncture of the needle lay parallel with the edge of the united wound, as in Fig. 1, A. Such a punctured wound was, by tying the suture, converted into a triangular wound (see Fig. 1, B), and formed often a small fistula when the wound did not heal by first intention. As the needle point is smooth on the concave

side of the curve, it loses strength and power of resistance, and is bent in hard tissues out of the course it was

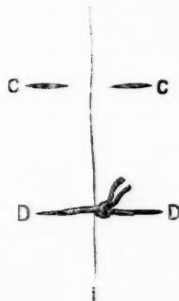
FIG. 1.



intended to follow. Besides this we have not had a needle-holder which would hold firmly and securely the needle without frequently breaking it.

The new needle, invented by Dr. Hagedorn, differs very much from the old needles. The sides are flatter, wider, parallel to one another, and also strong from point to eye. The anterior concave and posterior convex surfaces are smaller. The needles are also bent on the edge, and therefore are capable of withstanding more strain than other needles, which are bent on the flat surface. At the point the cutting edge is oblique on the convex side of the needle. The lower or inner border of the cutting edge is straight. The cutting edge is two or three times as long as the needle is wide. The needle point has nearly the shape of a broad cataract knife, if you suppose the back to be thick. This is important and necessary, because then the point of entrance of the needle remains in the same relation to the wound, and the cutting edges of the needle will produce widening of the canal through the opposing edges. If the point were lancet-shaped, strong pressure or accident might cause the needle to cut a canal undesirably close to the edge of the wound, or even through the edge. The puncture of this needle is a slit at right angle to the edge of the wound, like the button-hole on

FIG. 2.



a coat (Fig. 2, C), which is closed by the knot on the thread. In many cases this flat needle will do less injury in suture of the nerves and tendons, which is not

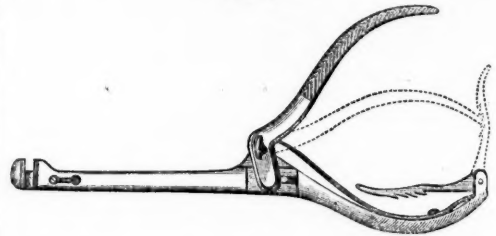
¹ Translated by R. S. Sutton, of Pittsburg, Pa.

unimportant. Moreover, this needle is easy to sharpen, because the point and cutting edge lie in the same line. It cannot be injured by pressure, and is easier to carry about. Only those needles for intestinal suture have an entirely round point, instead of a cutting edge. The eye on these flat needles can be made larger. It is a large, well-proportioned, wide, oval opening. Moreover, the end of the needle containing the eye is wedge-shaped, the outer end tapering off thin. On account of this, a strong double thread will follow the needle without difficulty through the canal it makes. On account of its construction, the needle can be fastened on any surface with security and firmness, and is very easily used (Fig. 3).

All the needle-holders now used secure curved needles in this manner, so that the flat surface of one jaw rests upon the concave surface and the other on the convex surface; therefore, by strong pressure, the needle is easily broken, and with weak pressure the needle slips

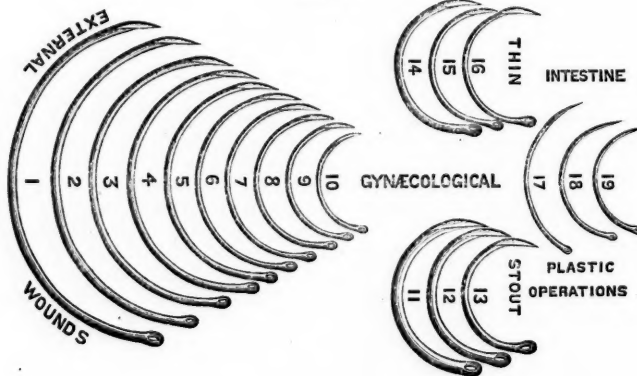
piece, shorter and movable. The two pieces at their front ends form the jaws of the holder, which stands at

FIG. 4.



right angles to the axis of the instrument. The inner surfaces of the jaws are plated with copper. The movement of the two pieces on one another opens and shuts the jaws. This action is produced by means of a

FIG. 3.



out of the holder. This new, unique needle-holder presses on the broad sides of the above-described flat needles, and as the jaws of the holder remain continually parallel with each other, all flat needles of any curve can be fastened in the same manner; and breaking of the needle, by the strongest pressure with the needle-holder, is not possible. The needle can be fastened so well that one may hold it as if in a handle, and yet it is easy to loosen it. No other needle-holder fastens and fixes the needle at any desirable point with such a firm grip, and it is just as easy to catch it and hold it at the point. With some experience, it is possible just as easily to seize the needle with the needle-holder as to use another instrument, or the hand to assist in seizing it. In sewing, when the point of the needle has gone through one side of the wound, the point of the needle can be grasped by the holder without risk. One not only prevents accident by drawing the needle through, but protects the surrounding soft parts from injury, which is important in sewing in a cavity. Hence it is possible that the holder seize the needle from its concave border, and, while the cutting edge lies on the convex side, both the cutting edge and point are secure from any pressure.

The needle-holder (Fig. 4) is made from a small piece of iron, ending in a handle, to which is attached a second

movable handle acting as a lever, which is fastened by a joint to the immovable handle. A serrated snap, which can be used or not, binds the two hand-grips together. Strong pressure with the full hand is sufficient to fasten any flat needle. The thick needle is firmly held at the first tooth of the snap; thinner ones by the lower teeth. Slight pressure of the little finger on the end of the snap easily loosens it and lets the needle loose. One must remember that the needle lies in the long diameter of the jaws, and lies firmly fixed on the piece of iron between the jaws. Therefore the needle has an additional support, and cannot change the position of its concave side, which it is inclined to do in cutting through. Moreover, the curved needle is easily adjusted, if one brings the jaws of the holder against the concave side of the needle, as is proper, and then turns the holder a little to the right before fastening the needle in the jaws. *Then only, if the needle is fastened in this manner, and the eye end of the needle shaft lies against the piece of iron behind the jaws, is the fastening of the needle absolutely safe.* The holder takes in little space, and is easily handled.

But for our particular suture, what is already said is not sufficient, if one wishes to apply a suture deep in a cavity in the sagittal plane of the body, for instance in a vesico-vaginal fistula high up. For such cases the sides of the

jaw, and consequently the opening between, stand obliquely, firmly fixed to a long handle; in this way a very oblique opening between the jaws is obtained. By reason of the obliquity of the opening, it is possible to apply such a suture if one will only turn the handle a little to the side. The catching and holding the point of the needle by this oblique opening between the jaws is not so easy as with the other holder, but is sufficiently easy after a little practice. For the various purposes, longer or shorter holders will be required.

1. The ordinary, $6\frac{1}{2}$ in. long, strong holder, of which the mouth is $\frac{3}{8}$ in. wide, and $\frac{1}{4}$ to $\frac{1}{2}$ in. deep, is sufficient for all ordinary surgical purposes, and can be used daily for years without repair.

2. The smallest, 5 in. long, holder, of which the mouth is $\frac{1}{4}$ in. wide and $\frac{1}{8}$ in. deep, is for plastic and ocular operations, as well as for intestinal operations.

3. For practising physicians, who prefer to combine in one instrument the advantages of both needle-holders, not requiring to sew so much, an intermediate size would be desirable, which is 6 in. long, and in the mouth $\frac{7}{8}$ in. wide, and $\frac{1}{4}$ in. deep.

For gynecological and operations in deep cavities, the following sizes are suitable:

4. One, 8 in. long in the mouth, $\frac{7}{8}$ in. broad, and $\frac{1}{2}$ in. deep; and,

5. One, with oblique mouth, $8\frac{3}{4}$ in. long; in the mouth $\frac{3}{4}$ in. wide, and $\frac{3}{8}$ in. deep.

As the flat curved needles, made in every form, possess many advantages which other needles do not possess, they are used in every form and of every strength; so this holder, with suitable needles included, will be found a suitable sewing instrument for any demand. In practice these needles have already found approval. Prof. Bardeleben (text-book for surgery and surgical operations, 8th edition, 1879, vol. i., addition to page 125) says, "If one perforates the margin of a wound with a double-edged cutting needle, the small wound produced is parallel with the edge of the wound, and gaps, in a triangular form, when the sutures are secured. One should always introduce a straight needle, so that one of the cutting edges looks towards the wound, the other away from it, and the wound through which the suture passes should stand at right angles to the wound when closed. To do the same with curved needles, Hagedorn has contributed an excellent apparatus, in which only the point and convex side of the needle cuts, and the whole results from side to side is flat, and a needle-holder accompanies these needles."

Prof. Fritsch (*Krankheiten der Frauen*, 2d ed., page 112) says: "As a needle-holder for all gynecological operations, I recommend highly Hagedorn's needle-holder. After many years of experiment, and having constructed many instruments myself, I have turned away from all, my own included. I cannot too highly recommend Hagedorn's needle-holder to the gynecologist. The needle-holder with straight mouth is employed for plastic operations; the one with the oblique mouth is to be preferred in operating in deep cavities and on irregular fistulas, Fig. 56."

Prof. Olshausen writes, in his recently issued *Klinischen Beiträge zur Gynäkologie und Geburtshilfe*, page 32, concerning operations on the cervix uteri, "The most useful needles to be recommended for these operations are the flat Hagedorn's needles, with an appropriate

needle-holder. These only are able to afford the many demands which will be made by the severe bending pressure in operations in dense cervical tissue."

In Dr. Wittelhöfer's *Wiener med. Wochenschrift*, No. 33, 1883, Dr. Riedel, Oberarzt der Chirurg of a department of the city hospital in Aix la Chapelle, expresses himself concerning utero-vesical and vesico-vaginal fistulas: "I use exclusively for sutures the Hagedorn's holder, with oblique mouth, and his flat needles. I do not think that any one who has worried himself with Simon's and other needle-holders will ever abandon this beautiful instrument, which is extraordinarily useful in all operations in deep cavities."

NEWS ITEMS.

MONTREAL.

(From our Special Correspondent.)

ONTARIO ANATOMY ACT.—For some years past there has been a great scarcity of subjects for anatomical purposes in the medical schools of Toronto. The students have yearly increased, but the amount of anatomical material has decreased. Never was it so inadequate as during the present session. To remedy this state of affairs a revised Anatomy Act has been framed, and will be shortly introduced into the Provincial Legislature. It provides that the bodies of those dying in public institutions, or found dead and not claimed by relatives or friends who are willing to bear the funeral expenses, shall be handed over to the medical schools for anatomical purposes. As during the past year over one hundred corpses were buried at the expense of the City of Toronto, it is thought that if this amended act passes the supply of anatomical material will hereafter be abundant.

THE ANNUAL EXAMINATION for the license of the College of Physicians and Surgeons of Ontario commenced at Toronto and Kingston on Tuesday, April 7th.

DR. LOVELL has been appointed Warden, and Dr. O. S. Strange, Surgeon, of the Kingston Penitentiary.

THE HON. DR. ROBITAILLE, ex-Lieutenant-Governor of the Province of Quebec, has been appointed to the Dominion Senate.

NEPHRO-LITHOTOMY.—Prof. L. McLane Tiffany performed the operation of nephro-lithotomy on February 21st, at the Hospital of the University of Maryland, upon a male, aged 26. The stone, which weighed 556 grains, was removed from the pelvis of the right kidney. The *Maryland Medical Journal* reports the patient as doing well.

BELLEVUE HOSPITAL MEDICAL COLLEGE.—The Twenty-fourth Annual Commencement of this Institution was held in the Metropolitan Opera House, New York, last Monday evening. Ex-Congressman Dorsheimer delivered a short address, in which he referred to the new pathological laboratory, built through the generosity of Mr. Andrew Carnegie. Mr. Carnegie subsequently delivered the address to the graduates. He was received by the class with a treble cheer, to which the audience added their applause. Dr. Isaac

E. Taylor conferred the degree of M.D. upon one hundred and thirty-four graduates.

UNIVERSITY OF THE CITY OF NEW YORK.—At the Annual Commencement of the Medical Department of the University held on March 10, the degree of M.D. was conferred on one hundred and seventy-five candidates.

UNIVERSITY OF TENNESSEE.—At the Annual Commencement of the Medical Department of the University of Tennessee, held at Nashville, February 24th, the degree of Doctor of Medicine was conferred on fifty-nine graduates of the institution.

UNIVERSITY OF NASHVILLE.—The degree of Doctor of Medicine was conferred upon one hundred graduates of the University of Nashville and Vanderbilt University at the annual commencement, held at Nashville February 26th.

MEMPHIS HOSPITAL MEDICAL COLLEGE.—The Fifth Annual Commencement of the Memphis Hospital Medical College took place on February 25th. Thirty-three graduates received the degree of M.D.

THE ARKANSAS INDUSTRIAL UNIVERSITY.—The Sixth Annual Commencement of the Medical Department of the Arkansas Industrial University, at which eight graduates received the degree of M.D., took place at Little Rock, March 4th.

COURT MARTIAL OF EX-SURGEON-GENERAL WALES.—The court martial to try Ex-Surgeon-General Wales, of the U. S. Navy, on the charges of culpable inefficiency and neglect of duty, met on Monday, and upon the request of counsel adjourned until April 14th, to give time for preparation of the defence.

MARINE HOSPITAL SERVICE.—The Secretary of the Treasury, on Tuesday last, appointed Surgeons Bailhache, Purviance, and Austin, a board to examine applicants for appointment as Assistant-Surgeon in the Marine Hospital Service, to meet in Washington on March 23.

DR. OSLER'S GULSTONIAN LECTURES.—This year's lenten lectures at the Royal College of Physicians, London, were opened on Thursday, February 26th, by Dr. Osler, of Philadelphia, who choose for the subject of his Gulstonian Lectures the fascinating disease known as ulcerative endocarditis. His first lecture was devoted to the naked eye and microscopic pathology of the affection, its clinical history and etiology being left for discussion in the lectures to be delivered on Tuesday and Thursday in the following week. The lecture was mainly *ex tempore*, lasted the ideal forty-five minutes, and was unusually well attended. Dr. Osler, as might have been expected, was most cordially greeted, and there can be no doubt that his lecture was such as was well worth while his coming across the water to deliver. —*London Medical Times*, February 28, 1885.

KOCH'S LABORATORY.—Under the terms of the liberal grant of money made by the German Government for the prosecution of his investigations of the cholera germ and related subjects, Dr. Koch is to admit thereto small

classes of the medical men of Germany, for the purpose of studying the comma-bacillus and its method of cultivation. Through the efforts of Minister Kasson and the courtesy of Prince Bismarck, Dr. George W. Lewis, of Buffalo, N. Y., has also been admitted to these classes, and in the current number of the *Buffalo Medical and Surgical Journal* he publishes an account of Dr. Koch's cultivation experiments.

OBITUARY RECORD.—Died, in this city, on March 10, ELLERSLIE WALLACE, M.D., Emeritus Professor of Obstetrics and Diseases of Women and Children in Jefferson Medical College, Philadelphia. Dr. Wallace was born in this city on June 15, 1819. He received his education at Bristol College, and was engaged for a time in the profession of civil engineer. He studied medicine in the office of his brother, Joshua Wallace, who, at the time, was Demonstrator of Anatomy in the Jefferson College, and graduated at that institution in 1843. After graduation Dr. Wallace was appointed Resident Physician at the Pennsylvania Hospital. In this place he remained three years, when in 1846, he was selected as Demonstrator of Anatomy in Jefferson College, a position which he held until 1863. In the latter year he was elected to the chair of Obstetrics, rendered vacant by the resignation of Dr. Charles D. Meigs, and he filled the duties of that position until June 1883, when he retired on account of failing health. He also filled the office of Dean at the College. Dr. Wallace had been in bad health for some months past, but the immediate cause of death was an erysipelas affection of the face and head. Dr. Wallace was a fluent lecturer, and a popular teacher, and was much beloved by his class.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM MARCH 3 TO MARCH 9, 1885.

BYRNE, CHARLES C., *Major and Surgeon*.—Ordered to Department of the East, on expiration of his present leave of absence. —*S. O. 50, A. G. O.*, March 3, 1885.

BROWN, H. E., *Major and Surgeon*.—Granted leave of absence for one month, with permission to apply for two months' extension. —*S. O. 48, Department of the East*, March 6, 1885.

WOODRUFF, EZRA, *Captain and Assistant Surgeon*.—Ordered for duty at Fort Maginnis, Montana Territory.—*S. O. 23, Department of Dakota*, February 25, 1885.

PORTER, J. Y., *Captain and Assistant Surgeon*.—Sick leave of absence further extended fourteen days on account of sickness. —*S. O. 51, A. G. O.*, March 5, 1885.

EWING, C. B., *First Lieutenant and Assistant Surgeon*.—Having relinquished unexpired portion of leave of absence, ordered for temporary duty in the field. —*S. O. 23, Department of the Missouri*, March 2, 1885.

RAYMOND HENRY I., *First Lieutenant and Assistant Surgeon* (recently appointed).—Ordered for duty in Department of California.—*S. O. 50, A. G. O.*, March 3, 1885.

THE MEDICAL NEWS will be pleased to receive early intelligence of local events of general medical interest, or of matters which it is desirable to bring to the notice of the profession.

Local papers containing reports or news items should be marked. Letters, whether written for publication or private information, must be authenticated by the names and addresses of their writers—of course not necessarily for publication.

All communications relating to the editorial department of the NEWS should be addressed to No. 1004 Walnut Street, Philadelphia.